THE LANCET.

VOL. I.] LONDON, SATURDAY, DECEMBER 7, 1839. [1839-40.

COURSE OF LECTURES
ON THE
PHYSIOLOGY AND PATHOLOGY OF THE BLOOD,
AND
THE OTHER ANIMAL FLUIDS,
DELIVERED IN THE SESSION OF 1839-40,
AT THE
School of Anatomy adjoining St. George's Hospital,

BY HENRY ANCELL, ESQ., SURGEON.

LECTURE 5.—*Microscopical history of the blood.—Power of the microscope.—Hewson's important discoveries and accuracy of observation.—Form of the blood corpuscle: differs in different animals: improperly called "globule," "particle," "vesicle," or "disk."—Size: varies in different animals and in different individuals among mankind.—Structure: the solid organic part of the vital fluid.—Colour.—Microscopico-chemical phenomena.—Number of the red corpuscles: extensive variations in this respect, according to age, sex, temperament, individual constitution, diet, and diseases.—Vital importance of the corpuscular part of the blood.*

GENTLEMEN:—Leaving our chemical inquiries for the present, I wish, in the next place, to call your attention to the microscopical history of the blood. The instrument belonging to Mr. Lane, now before you, is one of the very best description, made by Powell, and capable of magnifying an object with its highest power, as much as 500 diameters, equal to 125,000,000 times the whole volume, without any loss of distinct vision.* We can examine the blood microscopically, not only at any time after its removal from the body, but during life, as it flows in its vessels, in the web of a frog's foot, or the tail of a stickleback, for instance, or in the lungs or mesentery of the salamander, toad, frog, &c. For the latter purpose, the method described by Dr. Marshall Hall is usually resorted to:—On plunging a batachrian animal into water, at a temperature from 108° to 120° Fah., an immediate and complete annihilation of sensibility takes place, all motion ceases, the limbs become exceedingly and permanently rigid, but the heart continues to beat for a considerable time, by which an opportunity is afforded of viewing the circulation in the lungs and other organs.

The living blood, as it flows in its vessels, and seen with the naked eye, is apparently homogeneous, and perfectly fluid; of a red colour in vertebrated and some other animals, but white, or otherwise shaded, in most of the invertebrata. When viewed microscopically, with a high power, it is seen to be a heterogeneous compound of two very distinct parts, viz., solid corpuscles suspended in a transparent fluid, the fluid of human blood being of a yellow, or greenish yellow, and the corpuscles of a red colour. The microscopical observations that have been made upon the blood, appertain chiefly to its solid corpuscular portion.

Malpighi, contemporary with Borelli, Ruysch, and De Graaf, was the first to discover the red corpuscles of the blood, towards the latter end of the seventeenth century, and they were soon afterwards more particularly described by Leeuwenhœck, who, believing them to be spherical in all the mammalia, called them *red globules*. At the time this discovery was made, as we learn from Borelli, the clot of the blood was supposed to consist of a glutinous substance united to a purple juice. Leeuwenhœck made some of his observations with a glass bead, which magnified the diameter 1,280 times, and others with a microscope of $\frac{1}{25}$ of an inch focus. The power of his glasses interfering with the distinctness of vision, and his desire to accommodate himself to the prevailing mathematical opinions, account for the deceptions and the erroneous theory of different *orders of globules*, into which he fell. This theory, and the influence which it had in medicine, but more particularly in the system of Boerhaave, were sufficiently described in the first lecture.

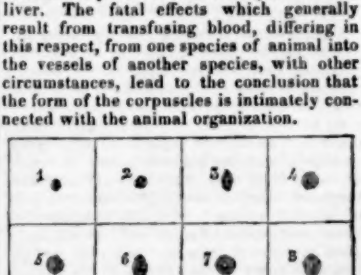
* $v : V : d^3 : D^3$
$1 : V : 1^3 : (500)^3$
$V = (500)^3 =$
125 millions of times the original mass.

It is to Mr. William Hewson that we are indebted for the first correct notions respecting the blood corpuscles. Hewson's name is too frequently omitted in the annals of physiology. He was a man of genius, who fell a sacrifice to his professional zeal at the early age of 35 years. Unquestionably one of the most accurate observers which this or any other country has to boast of—during the long night of more than half a century, which has cast its shade over many great names connected with humoral medicine, Hewson has scarcely been heard of. Contemporary with John Hunter, and a pupil of his school, this is in part attributable to the time at which he lived. The Hunters, and their successors, to the present day, have, sometimes, through an oversight of the value of his contributions to medical science, sometimes I fear through wilful neglect, appeared to forget him altogether. Even of late, since our continental brethren have directed their attention to the present subject, which is so much indebted to this physiologist, his very experiments have been repeated, and his discoveries appropriated, without the slightest acknowledgment. Nevertheless, there is reason to believe with Mr. Falconer, the editor of his posthumous essay on the blood, that his name will be enrolled amongst the "highest of antiquity," and his "fame will be transmitted to posterity."

I shall endeavour, in this lecture, to put you in possession of the most important facts which relate to the form, size, structure, colour, microscopico-chemical phenomena, number, and vital importance of this part of the blood.

On the Form of the Blood Corpuscles.—Hewson discovered that the red corpuscles are not globular, as they were almost universally believed to be in his time. In a paper published in the *Philosophical Transactions* for 1773, he pointed out new modes of investigating this subject, and described their form and structure with a much greater degree of accuracy than had hitherto been done, employing a microscope which magnified 184 diameters. He attributed his success in the inquiry to the discovery of a method of diluting the blood with serum instead of water, by which the structure of the red corpuscle is not damaged. A piece of clot is shaken in a small quantity of serum, till the latter becomes a little coloured; a portion of it is then spread upon a thin glass, and placed in the field of the microscope, so as to be not quite horizontal, that the serum may flow from the higher part to the lower. By this means some of the corpuscles are seen floating on their flat sides, and others turning over, as they roll down the glass. All subsequent observers have agreed with Hewson, that whatever their form otherwise, whether circular or elliptical, they are always *flattened*, and he remarks, that proving them to be flat also proves them to be solid, and not fluid, as was then commonly believed; because a fluid swimming in another of greater bulk, if it be not soluble, is always globular. Leeuwenhœck, and subsequent observers, have shown that the white blood of the invertebrated animals contains corpuscles analagous to those of vertebrata. Hewson saw them in an insect no bigger than a pin's head, and it appears that they exist almost universally in the animal kingdom. In the lower animals they are circular, but still flattened; they are also irregular and granular on their surface. Edwards describes them as uneven, and tuberculated, and as undergoing great changes of form during their circulation. In birds, reptiles, and fishes, as originally observed by Leeuwenhœck, and in some mammalia, according to recent observations, as the dromedary, these blood corpuscles are oval or elliptical, the long and short diameters being in the proportion of about two to one, and the flattening greater in reptiles, amphibia, and fishes, than in mammalia. Their thickness in the frog does not measure more than an eighth or a tenth of their long diameter. A prominence rises from the centre of each lateral surface in some reptiles and fishes, and, as remarked by Müller, there can be little doubt that this appearance is attributable to a central neucleus, which will presently be described. The disk of the *human* blood corpuscle and those of the other mammalia is again *circular*. Their thickness is about one-fourth or one-fifth their transverse diameter, and they are free from those remarkable inequalities of shape which have just been described.

The form of the blood corpuscle frequently differs in the embryotic period of existence from that of after-life. In the chick in *ovo* it is circular at first, and only becomes elliptical at the period of the development of the liver. The fatal effects which generally result from transfusing blood, differing in this respect, from one species of animal into the vessels of another species, with other circumstances, lead to the conclusion that the form of the corpuscles is intimately connected with the animal organization.



1. Ox, cat, ass, mouse, bat.
2. Man, rabbit, dog, porpus.
3. Pigeon, hen, chaffinch, duck.
4. Chick from the egg, sixth day of incubation.
5. Salmon, carp, eel.
6. Piper, turtle.
7. Piper, from the abdomen of its mother.
8. Slow-worm.
9. Frog.
10. Skate.
11. Lobster.
12. Lobster, after being a short time exposed to air.

The above will serve to convey some notion of the bodies in question to those who have not the means of examining them. They have evidently been taken with a low magnifying power.

The universally-flattened form of these substances renders the expression "*blood globule*" obviously incorrect, nor is the term "*particle*," employed by Hewson, unobjectionable, since the parts of the blood which it designates consist of distinct complex, although minute organs. The term "*vesicle*" can only apply to one portion of their structure, as we shall afterwards see, and "*disk*" is an improper term, as referring to the surface only as presented to the eye. Upon the whole, I think, *corpuscle* is the least objectionable appellation; I propose, therefore, to adhere to this term, when speaking of the bodies which float in the transparent part, and form an essential constituent of the blood of animals.

Table XII

Exemplifies the different sizes of the Blood Corpuscles of Animals in parts of an English inch.

1. *Circular;*			
Goat ....(dry).....	1.6250th	.....	Lane
Ox.....	1.4430th	.....	Wagner.
Mouse ...(dry).....	1.4000th	.....	Lane.
Rhinoceros.....	1.3300th	to 1.5200th	Owen.
Armadillo	1.3800th	.....	Owen.
Giraffe.....	1.1400th	to 1.4800th	Owen.
Man	1.3900th	.....	M. Edwards.
.....	1.4076th	.....	M. Dumas.
.....	1.3000th	.....	Various Obs.
.....	1.4430th	to 1.3323rd	Wagner.
.....	1.4029th	to 1.2637th	Müller.
..... (dry)	1.3125th	.....	Lane.
.....(moist)	1.3482nd	.....	Lane.
2. *Elliptical:*	Long Diameter.	Short Diameter.	
Dromedary.....	1.3800th	1.6500th	Owen.
Toad.... (dry).....	1.1041st	1.1562nd	Lane.
Fowl	1.1681st	1.2769th	Wagner.
Land Tortoise.....	1.1219th	1.1955th	Prévost and D.
Salamander.....	1.889th	1.1422nd	Prévost and D.
Snake.....	1.1524th	1.2540th	Prévost and D.
Goose	1.2184th	1.2810th	Prévost and D.
Cod Fish.....	1.2222nd	1.2500th	Lane.

Of the Size of the Blood Corpuscles.—This is usually ascertained by means of a small plate of glass, graduated to 10ths, 100ths, 1000ths, &c., of an inch, and called a *micrometer*. Or by the screw of the instrument which moves the stage being graduated to ten thousandths of an inch, while a cob-web in the eye-piece gives you a stationary line, and enables you to read off the dimensions of the minutest object. Sometimes the plan of M. Amici with the *camera lucida*, has been adopted, giving a magnifying power of 900 diameters, and by the latter method more minute shades of difference have been determined. The blood corpuscles differ greatly in size in different animals; those of the skate were the largest examined by Mr. Hewson. Generally speaking, amphibia possess the largest; those of birds, reptiles, and fishes are smaller; and those of mammalia the smallest among vertebrated animals. The irregular circular corpuscles of invertebrata are subject to very great variations of size as well as form. In those of the oyster, for instance, Mr. Edwards detected some 60-10.000ths, others 54 10.000ths, and some 40-10.000ths of a line in diameter. The above table will exemplify these differences of size, which are evidently specific, and follow no known rule. Those of the goat, amongst mammalia, are, I believe, the smallest that have been measured.

The circular corpuscles of human blood are about one-third the long diameter of the frog's, but very different statements have been made respecting the former. Some of these discrepancies are attributable to different methods of observation. Mr. Lane has furnished me with a memorandum to the following effect:—"The blood corpuscles placed between a piece of talk and glass, vary much in size, when examined at different times, the blood remaining fluid in this situation for at least 12 hours, and the corpuscles undergoing changes which influence their size. I prefer measuring them after they have been thinly spread on glass, and quickly dried, because they vary less when thus treated." But the concurrent testimony of different observers tends to prove that they vary in size in the same and in different individuals, if not in different vessels. I have selected for Table XII. those which appear to me the most to be depended upon.

Hewson observed that they differ in size in the same species of animal at different periods of life. In the chicken on the sixth day of incubation, he found them larger than in the full-grown hen, as seen in Table XI.; and larger in the blood of the very young viper than in that of the mother out of whose abdomen it was taken. This observation has been confirmed, and, as a general rule, the corpuscles of the embryo are larger than those of the adult animal. By the method of examining them with the *camera lucida* it has been shown, as just now observed, that they differ in size even in the same individual. Edwards states that, in the river crab, it is by no means difficult in the same drop of blood to find them of very different dimensions; and although the difference is much less remarkable among the higher animals, it still exists. In the same drop of frog's blood he saw corpuscles that differed from each other in diameter in the proportion of 39 to 45, without being able to ascribe the variation to any circumstance connected with the mode of observing. Similar variations of size were found in those of human blood, their diameters in the same drop bearing the ratio to each other of 112 to 140. Raspail asserts that their diameters differ in different vessels of the same individual. Finally, Mr. Bowerbank gives the result of his examination of the human blood corpuscles of four individuals, in parts of an English inch, as follows:—

	Largest	Smallest	Average
1st male	1.3279th	1.4545th	1.3687th
2nd female	1.3105th	1.3891st	1.3474th
3rd male	1.2754th	1.3922nd	1.3343rd
4th male	1.1862nd	1.4166th	1.2861st

With respect to these admeasurements, generally, we are induced to inquire whether they are made from a few corpuscles only which vary in a marked degree from the great bulk contained in the fluid, or whether they are estimated from the whole mass? since the former method would be calculated to produce a very erroneous opinion. As the matter stands, there is strong reason for presuming that their size is of considerable physiological importance, but the inquiry is in so completely an infantile state, that we cannot attempt to define it. When blood, composed of corpuscles differing in size, is transfused into an animal, the disturbance produced is very considerable, but the operation is by no means so fatal as when they vary in shape.

Structure of the Blood Corpuscle.—Great differences of opinion have existed among micographers respecting their structure in different animals. Bohn, pupil of Malpighi, Bernuilli, Keil, and others, imagined them to be made up of viscid *bullulæ*, inclosing little spherules of air. When they found that a corpuscle arriving at a minute vessel which it was unable to pass, appeared to be compressed and flattened in its passage, and that when it got into a wider channel it seemed to resume its former figure, they concluded that these appearances depend upon an inclosed elastic fluid restoring itself after compression. Della Torre published some curious observations on the blood, in which he described a dark spot in the middle of each, and mistook it for a hole; he and Styles regarded them as annular. Young considered what Della Torre mistook for a perforation, and Hewson, as we shall presently see, discovered to be a nucleus, as a depression, and the annular mark as a central shade on the disk, which he inferred from its being darkest on that side on which the marginal part appears the brightest. His opinion was, that these corpuscles are in the form of double concave lenses, and Dr. Hodgkin and Mr. Lister have endeavoured to prove its correctness. They state, 1st. That the image of an opaque body placed between them and the light is transmitted in an inverted position, precisely as would happen with a concave lens. 2ndly. That their appearance, when viewed dry, as opaque objects, is favourable to this view. 3rdly. That their concave surfaces came into view when seen at right angles to the surface in the focus of the lens. M. Magendie is another of the physiologists who denies the existence of a solid nucleus in mammiferous animals. He says a black or white spot is observable in the centre, according to its degree of approximation to the focus of the microscope, and the quality of light that falls upon it; so that sometimes one may fancy them perforated in the centre, and at other times possessed of a nucleus. But his principal reason for denying the existence of the latter is this:—Take some blood of a fish or reptile, place the corpuscles in the focus of a

microscope, and you perceive a swelling in the centre; next dissolve them, and examine the water used for the purpose, and you will perceive only the minute bodies which formed the centre, and are insoluble, whereas, in the case of human blood, water dissolves the corpuscles completely, and, according to Magendie, no vestige of them is discernable after the water has fully acted. With a magnifying power of 1800 times, he has been unable to satisfy himself of the existence either of an investment or a nucleus. M. Donné has described them as utricles or bags containing a liquid.

In answer to most of these views, which have greatly complicated the subject, and served to create considerable doubts respecting the practicability of making accurate microscopical observations on bodies so minute, it must be stated that Dr. Young himself admitted the existence of a nucleus in the blood of the skate, and also candidly allowed that he was not perfectly confident that the apparent depression exhibited in particular lights may not depend on some internal variation of the refractive density. With respect to Magendie's objections, also, it is quite an error to suppose the corpuscle of human blood more soluble in water than that of the lower animals. This error may be accounted for partly by their passing more readily through filtering paper on account of their small size, and partly by the loss of a great portion of their colouring matter, with which they lose in specific gravity, and are accordingly suspended in the fluid. Letellier and many others who have looked to this point, affirm that water does not dissolve the corpuscles of mammalia more perfectly than those of reptiles. Some of the above named observers are known to have employed glasses of too low a power; and, with respect to the opinion of Young, Hodgkin, and Lister that they are double concave lenses, Mr. Edwards suggests that the appearances observed may depend on an alteration of frequent occurrence; in fact, he describes a change in the structure of the blood corpuscle, in which it takes on the general form of a bi-concave disk, agreeing very well with the description of Dr. Hodgkin and Mr. Lister, and very common in human blood, but by no means its normal condition.

Hewson was the first to point out the true structure of this part of the blood. He observed the dark spots already mentioned, and also that around each of these the corpuscle is more transparent; and he inferred, from the following and other experiments, that this spot depends on a solid nucleus, contained in a flat vesicle, whose middle only it fills, and whose edges are hollow, and either empty or filled with a *subtile fluid*. Take a drop of blood, put it on an inclined glass stage, as in the experiment to ascertain the shape of the corpuscle, add to it some water, drop by drop, gradually increasing the quantity. In proportion as the water is added, their figure will be changed from flat to spherical, and when they have assumed the latter shape, they will roll down the glass stage smoothly, without those phases which they had when flat, and the solid central nucleus can be seen to fall from side to side in the hollow vesicle, like a pea in a bladder. If too much water be added, Hewson says, the vesicle will be dissolved, but it is most likely that the colouring matter is so completely abstracted, that it becomes invisible. This physiologist also remarks, that the observation is more easily made upon the corpuscles of fish or frogs, from their larger size, than upon those of human blood.

Hewson's opinion of the existence of a solid central nucleus has been completely established by later physiologists. With respect to *reptiles*, Prevost and Dumas have seen the outer envelope tear, and expose the central nucleus naked. By acting with a little weak acetic acid on the blood corpuscle previously placed on the object plate of a microscope, they are speedily stripped of their envelope, and their nucleus is obtained isolated. Mr. Lane and myself have seen the nucleus of frog's blood, with its loose envelope, deprived of colouring matter, floating in the field of the microscope, and Müller satisfied himself of the same thing by Hewson's experiment, above described. This part of the *human* blood corpuscle has not been quite so satisfactorily observed; but Müller states that he has seen "a minute, round, accurately defined nucleus, which had a more yellowish and shining aspect than the transparent part about it. Schultze, by a peculiar process presently to be described, has convinced himself of it. The chemical facts respecting this part of the blood are very strong in its favour, and, upon the whole, I am led to agree with Mr. Edwards, that the existence of a solid central nucleus, as originally discovered by Hewson, in the corpuscles of human blood, is completely demonstrated. Schultze professes to have discovered that their nuclei vary greatly in size in the blood of each individual.

Thus much with respect to the nucleus. We have seen that Hewson discovered the membranous covering which forms the periphery of the red corpuscle also, and this is equally well established with the former. It would appear from Schultze's observations, that it is a mistake to suppose this membrane soluble in water. According to him, it is the colouring matter only which is dissolved, and the vesicular membrane remains entirely colourless, and of a vitreous pellucidity, so as to be invisible, which circumstance has led to the error. In order to demonstrate this part of the corpuscles, he recommends us to deprive them com-

pletely of their colouring matter, so as to render them nearly imperceptible, then to add tincture of iodine, by which means the membrane is made to assume a remarkable brown colour, and the details of the structure may then be recognised. According to Edwards, this vesicular membrane is highly elastic, and, according to Schultze, it possesses an organic contractility.

There is yet another question respecting the structure of the blood corpuscles. In Professor Schultze's paper on the blood, published in THE LANCET, Vol. II., 1839, p. 713, it is stated that the interior of the membraneous covering of the vesicle is filled with an elastic fluid, in the midst of which the nucleus is found. It is urged, in proof, that, as soon as the colouring matter is dissolved, the nucleus may be seen, not filling the interior of the vesicle, but leaving a space, and this cannot be absolutely empty, since the parietes are compressed in all directions by the surrounding fluid. If this be true, or if, instead of an elastic fluid, the membranes enclose a thin liquid, the credit of the discovery is also due to Hewson. He uses the term vesicle, and states distinctly, as above mentioned, that it probably contains a subtile fluid. Thus, our present knowledge of the structure of the blood corpuscles, that they are composed of vesicular membranes, enclosing solid nuclei, surrounded by an elastic or subtile fluid, and varying in shape and size in different animals, and in the same species of animal at different periods of life, is precisely that which was originally published to the profession, by William Hewson.

Of the Colour of the Blood Corpuscles.—We have already seen that the colour of the blood depends upon a peculiar animal proximate principle, to which the term *hæmatosine* has been applied, and I have described the chemical properties of this substance as procured from it after the cessation of its vitality. This colouring principle forms a part of the organic blood corpuscle, and its immediate seat is, in all probability, the investing membrane.* Edwards seems to think that it is contained between the envelope and the nucleus, but the observations of other physiologists, particularly those of Hewson and Schultze, both microscopical and chemical, render it much more probable that it is connected with the membrane itself, and capable of separation from it by various agents. You must bear in mind that the chemical properties of hematosine already given, appertains to it in its solid state, and that, like albumen, the effects of many of these are different as it exists in its original state in the blood corpuscle. Animals present very great differences in regard to this colouring matter. Those with white blood have corpuscles entirely devoid of hematosine. In some of the lower animals, coloured blood circulates only in vessels near the heart. In some fishes red blood traverses particular parts only, while the general structures are pale; in the skate, for instance, the fins have scarlet blood in their ramifying vessels, while in the rest of the body it is white. These phenomena, doubtless, depend upon the presence or absence of hematosine, or its prototype, in the living system. Schultze considers that the human blood corpuscles are originally without colour, and that the hematosine is derived in the progress of their development, and is contained in the parietes, or vesicular membrane. He states that their shape varies according to the quantity of hematosine which they contain. They are flattened when the quantity is great, and swell out and become globular when deprived of it, the membranes being contracted and thickened as long as it is abundant. The corpuscles of fishes generally contain very little, those of reptiles more, those of birds, mammalia, and man, most. Schultze found that the quantity of colouring matter in the blood corpuscles not only of different classes and species of animal varied greatly, but also in those of different individuals of the same species, and in the same individual. Hematosine seems to be the least destructible of the chemical principles of the blood, retaining the qualities which it possesses in that fluid, after having been kept for many years. It gradually diminishes to a certain point in all diseases and states of the system in which hæmorrhages occur, and in proportion to their extent and duration, and it is very slowly reproduced, as is shown by the fact that those who have suffered large losses of blood remain exsanguine for many months, and even years. Suffice it at present to say, that the colour of the blood corpuscle, and, accordingly, the red colour of the blood, is referrable to this peculiar principle, to which we shall have to refer when the subject of variations of colour, in different states of the system is before us.

Of the Number of the Blood Corpuscles.—Perhaps it is not possible to make any very accurate estimate of this, so as to represent it in figures. By measuring their thickness and superficial extent, the number contained in a cubic inch might be calculated, and by comparing this with the quantity of blood in the frame, we might make a rough computation of the infinite number of these bodies in the blood, but this could not be done with a sufficient degree of accuracy to answer any useful purpose. Chemical analysis, however, has enabled us to arrive at the proportional weight of this part of the blood. In the commentary on Tables

* It is the most ponderous of all the constituents of the blood, and the cause of the red corpuscles having a greater specific gravity than the fluid in which they float.

I. and II., the process by which this is effected has been detailed. The white substance and the hematosine are the solid materials derived from the red corpuscles of the blood, and they exist in proportions varying from 64.327 to 155.855 parts in a thousand in healthy individuals, but it must be remembered that these are only the solid materials derived from the corpuscles, as they float in the living blood, and since there can be no doubt that in their organic state, like other animal structures, they are combined with a portion of the water of the blood, we must not mistake the last-mentioned figures, as representing the *absolute weight* of the red corpuscles of the living blood. Nevertheless, as the absolute weight of the solid material, it is a legitimate inference that they represent in some degree the *proportionate* weight, and most probably the proportionate number of the corpuscles in the blood of individuals. As such nothing can exceed the interest which attaches to the results of late inquiries respecting these proportionate quantities. It appears that the red corpuscles in the blood of mankind, vary in number, in bulk, or in both respects, in different individuals. This fundamental fact is corroborated by the general agreement of the results of recent investigations conducted by various operators, but to illustrate it I shall quote M. Le Canu chiefly, whose accuracy is generally admitted in this country. M. Le Canu finds, on taking the mean after numerous comparative analyses, that the proportionate quantity of this part of the blood varies, according to sex, as follows:—

Male.....	132.150
Female	99.1695
Difference	32.9805

In fact, as regards mankind, the blood of the male sex differs from that of the female by containing about one-fourth more of the red corpuscular part. So also with respect to temperament there is an equally well marked difference; thus in males of a

Sanguineous temperament.....136.497	
Lymphatic temperament 116.667	
Difference ..	19.830

In Females.

Sanguineous temperament 126.174	
Lymphatic temperament 117.300	
Difference ..	8.874

Differences have also been discovered at different ages. There are some most interesting observations by M. Denis quoted by Le Canu, showing the remarkable effect of diet upon the proportion of the red corpuscles of the blood. A young girl in perfect health was bled. A thousand parts of blood furnished 132.3 parts of solid material from the corpuscle; she was submitted to rigorous abstinence for 15 days, and the blood again examined. It now furnished only 87.9 parts of solid corpuscular matter in a 1000. The blood of a woman 39 years of age, in perfect health, furnished 164 parts; but after eight days severe abstinence only 110 in 1000. The clear inference from all this is that diet has a most decided, and in all probability, a direct effect upon the proportion of the more solid to the more liquid part of the blood, or otherwise expressed, in the number of the organic blood corpuscles floating in the living fluid. From actual experiment also no room is left for doubting that in various diseases of the general system changes take place in the proportional, as well as the actual number, in the system. M. Le Canu found that they were greatly diminished in females subject to copious menstrual fluxes. He found also by experiment that they were greatly diminished in proportion by loss of blood, and this is confirmed by Messrs. Prévost and Dumas. The blood of a young man at the first bleeding afforded 139.129 parts of the solid matter; at the third bleeding it afforded only 76.19 parts. I wish to impress upon your minds the FACT, that individuals whom you see around you *differ* from each other in the constitution of their blood in numerous respects. In particular that this part of the vital fluid, which the microscope has revealed to us, has been found to vary in proportion in the ratio of from 64 to 155 consistently with health, and little or no doubt can remain that there may be more than twice as many red corpuscles in the blood of one patient whom you may be called to treat, as compared with another, apart from any influence of the disease itself. The physiological importance of the vital blood corpuscle must stamp the value of this fact.

Of the Microscopico-chemical Phenomena of the Blood Corpuscles.—Regarding these bodies, as formed of investing membranes containing solid nuclei, and probably a subtile fluid, we have seen that the bulk of the material of which they are composed is an albuminous or fibrinous matter, and that they also furnish the animal colouring principle hematosine, the chemical properties of which, as proximate principles of organic matter, have been described. But I have now to call your attention to the effects of certain substances, as observed by the aid of the microscope, upon these complex bodies in their original state, before they have been broken or changed by the processes of chemical analysis, or by decay.

In the first place of *water*. When frog's blood is diluted with water, the elliptical corpuscles immediately become globular, since they no longer present a sharp edge to the eye as they roll over in the fluid; they are also rendered unequal in size, uneven on the surface, and irregular in form; in some the nucleus is removed from the centre to

the side; in a few it is absent, as if the violent change produced by the water had extricated the nucleus, and a few of these without envelopes are observed in the field. By adding more and more water, they appear to diminish in size, till nothing but the insoluble nuclei remain, the hematosine is completely dissolved, water taking this up in all proportions. Müller thinks the investing membrane is dissolved; but Schultze says it is rendered invisible only, and that the addition of a little tincture of iodine brings it again into view, by changing it to a brown colour. When the human blood corpuscles are added to water they become indistinct, and the further changes are distinguished with difficulty. According to Müller, they swell out, and are rendered globular, like those of frog's blood, and for the same reason. The observations of Young and Letellier, who I have already quoted, correspond with this statement, and, taken with the chemical phenomena which follow, leave very little doubt that water extracts the hematosine, and leaves the nucleus undissolved.

Müller adopted a new plan. He deprived the blood of its fibrine by brisk stirring. The corpuscles then preserve their form and size for some hours and even days. Then, by agitating a small quantity of the serum containing the red corpuscles with a considerable quantity of water, the colouring matter is dissolved, and the nucleus may be demonstrated in frog's blood. He did not succeed in demonstrating the nuclei of human blood in this way, on account, as he says, of their minuteness. It is his opinion that, when the corpuscles are washed out of the clot of human blood by means of water, the nuclei may remain in the fibrinous mass, or become suspended in the water, but not dissolved. All this accords with the original statement of Hewson, except that he believed the nuclei of every variety of blood corpuscle to be soluble in water, but slower in dissolving than the vesicular portion. Schultze says, the same quantity of water acts very differently upon different corpuscles, some losing their colour soon, others not until after a long period, owing to the difference in the quantity of red colouring matter.

Serum.—Hewson, as we have seen in his experiments, took advantage of the property which serum has of diluting the red corpuscles, without otherwise altering them. He was of opinion that this property depends on the salts which it contains, and that, since they are altered in a very strong or a very weak solution of salts, it is probable that nature has limited the proportions of the latter in the blood, allowing of a considerable range. Berzelius attributed the insolubility of the colouring matter of the blood in serum to the albumen which it contains; but Müller agrees with Hewson, that it is chiefly owing to its salts. To disprove Berzelius's opinion, he added frog's blood to a solution of yolk of egg under the microscope, and found the corpuscle change from a flattened to a spheriele form, as rapidly as when water alone was added; but when he added a watery solution of various salts, they were not at all altered.* No change takes place in the corpuscles when kept for some hours or a day in serum that has been defibrinated. When kept in serum for several days, until it begins to putrify, they become spherical, and their external surface corrugated, and they assume what Hewson has called a *mulberry appearance*, represented by fig. 12, Table XI.

In order to ascertain the effects of fluids on the corpuscles, the plan to be pursued is, to free a drop of frog's blood of its fibrine, place it with a drop of the liquid to be examined side by side on a plate of glass, and make the two drops unite in the field of the microscope, watching the effects the moment they come in contact. For the purpose of ascertaining the effects of gases, two methods have been recommended—either to pass the gas through a tube moistened internally with the blood, or to pour the blood into a very narrow-necked glass jar filled with the gas.

Vital Phenomena of the Blood Corpuscles.—Considering the great neglect of the fluids since the time of Hewson, it is not surprising that until a late perod little or no knowledge had been acquired upon this part of the subject. From the authorities already quoted, we are now, however, in possession of very important facts. The relative proportion of the red corpuscles to the transparent fluid, which together constitute the living blood, is greater in the male than in the female sex; in the sanguine, than in the lymphatic temperament; in adults, than in children and old people; in individuals well nourished, than in those subject to scanty nutrition. They are in greater proportion in birds than in other animals; in carnivora, than in herbivora; and, on the contrary, in much the smallest proportion in animals with cold blood. There is a most remarkable and unequivocal relation between the quantity of red corpuscles and the degree of heat developed by an animal; birds which have the greatest number have the highest temperature and the most active respiration; carnivorous and omnivorous mammalia have also a higher temperature and a more active respiration than herbivorous animals, and as we have seen, they are fewest in number in cold-blooded vertebrata. The proportion of

* Schultze accounts for this insolubility of the colouring matter in serum by the strong contraction of the membrane, excited by the action of the salt. On diluting the saline solution, as the irritation diminishes, the hematosine is dissolved.

the corpuscles of the blood would seem to serve as a measure of the vital energy of the system. A most important observation, also, is, that of M. Prévost and Dumas, who have concluded from their experiments, that the fluid part of the blood has little or no action on the nervous system, while the red corpuscles excite it most violently. It appears, also, that every cause which tends to diminish the mass of blood reduces their relative proportion, and augments that of the water, in such a manner as to superinduce both emptiness of the blood-vessels and poverty of the remaining fluid contained in them. Uterine and other hæmorrhages produce, in a marked manner, this double effect, which may, probably, be explained upon this principle, that in proportion as blood is lost aqueous fluid is received by that which remains, as occurs when bleeding is successfully employed to promote the absorption of dropsical effusions. Individuals who have a large full pulse, with distended superficial veins, indicating an abundance of blood in the system, furnish a large proportion of corpuscles, and comparatively little water; those, on the contrary, with a small, feeble, empty pulse, and superficial veins, scarcely visible, have a large proportion of water and few red corpuscles. The importance of these facts will be enhanced when the physiological phenomena respecting the fibrine are before us, but alone, they prove, incontestibly, that the expressions RICH BLOOD and POOR BLOOD have a *scientific* basis. They have also an inestimable *practical* importance, and the ridicule which many have attempted to cast upon those who adopt these common-sense opinions, must recoil upon themselves as inevitably as that TRUTH must prevail.

TABLE XIII.

Exhibits the Effects of various Substances upon the red Corpuscles of the Blood, with the Names of Authorities.

Acetic acid	Dissolves the envelopes and leaves the nuclei isolated. At the moment of contact the elliptical corpuscles become irregular in form, and some are rendered globular. The colouring matter almost entirely dissolved, leaving small bodies, about a third or fourth the diameter of the originals, which are the nuclei deprived of it. Müller says the membrane is not entirely dissolved, since he could distinguish an exceedingly pale line round the nucleus after the action of the acid. By this means the nuclei of the blood of mammalia may be rendered visible; but the most careful manipulation, and a very clear instrument, are required for the purpose.....	Edwards.
Saturated solutions of sulphate soda, sulphate magnesia, nitrate potassa, nit. ammonia, nit. magnesia, nit. lime, chloride sodium, acetate potassa, muriate potassa.	Contract the membranes so that the corpuscles appear quite solid, the envelope being closely applied to the central part	Hewson, Schultze.
The above solution diluted with six, eight, ten, or twelve times their quantity of water.	No change whatever; the flat shape can be seen even more distinctly than when mixed with serum.....	Hewson.
Strong saline solutions	Elastic fluid around the nuclei partially pressed out, and escapes in the form of air bubbles	Schultze.
Saturated solut.; carbonate potassa.	Slight and gradual diminution of size.....	Müller.
Water holding sugar in solut.	No change in form or size.	

Liquid potassa.....	Dissolves both envelope and nuclei without previous change of form.....	Müller.
Liquid ammonia	Dissolves completely and rapidly. At the moment of mixture they become globular..	Müller.
Alcohol.....	Contracts	Hewson, Müller, Schultze.
Hydrochloric acid.....	Envelope not entirely dissolved	Hewson, Müller.
Sulphuric, nitric, and phosphoric acids.	Dissolve	Hewson.
Aluminous and metallic saline solutions.	When strong, corrugate the corpuscles; when weak, their effects resemble water..	Hewson.
Urine.....	When it contains much of its salts, resembles serum; when weaker, its effects more like water.....	Hewson.
Strychnia and Morphia	No change	Müller.
Hydrosulphuric acid	Destroys their colour and their whole substance	Magendie.
Bicarbonate of soda.....	Tinges a scarlet colour	Magendie.
Tannic acid	Changes their colour to a pale pink.....	Magendie.
Oil	Dissolves with some detritus, but no separation of aqueous fluid	Magendie.
Iodine	Turns the membrane of a remarkable brown colour	Schultze.
Oxygen of atmosphere	After distension with water, makes them contract and partially resume their flattened form.....	Schultze.
Cold	Cold spring water makes them contract....	Schultze.
Chlorine gas.....	Destroys the colour, but the elliptical particles are only rendered somewhat smaller without change of shape	Müller.
Oxygen gas	Form not affected	Müller.
Carbonic acid	Form not affected	Müller.

Kolk, Treviranus, and others, have affirmed that the blood corpuscles possess a rotatory motion during life, which is independent of the moving powers of the general mass of the blood. They are said to move on by themselves, and to keep at a distance from each other, indicating a *vital repulsion*, and when brought into contact with the tissues, they are subject to another and a contrary force, by which they are attracted and tend to a state of rest. These phenomena are compared to vortices, whence particles continually pass from the capillaries, and are lost in the tissues, there being, at the same time, an extrication of particles from the tissues, which are received into the blood. Some most interesting observations are contained in the account of Professor Schultze's observations already referred to. He describes them as possessed of an *organic contractility*, which acts upon the application of certain irritants, and as undergoing a continual evolution and regeneration, whether in the embryo or in the processes of digestion and assimilation. Contractility, according to Schultze, varies in degree in different corpuscles at different periods of their existence, and they are true respiratory organs; this process occurring through them, to a certain degree, in some of the lower animals without a special apparatus, and having a direct effect upon them in the

respiratory organs of the higher classes. The blood may be diseased by the accumulation of old corpuscles,—by their colouring matter becoming more or less imperfect,—by the augmentation or loss of their contractility, which sometimes becomes perfectly paralised,—by the absence of the healthy respiratory changes, and other circumstances. Medicines, also, may produce their effects on these organic corpuscles. For the particulars of this ingenious system I must refer you to the author himself. Nothing can exceed the interest which attaches to it, but of course it cannot be adopted on the authority of *one witness;* we are here tracing the operations of nature to the *arcanum* of the animal economy, and the utmost caution is dictated both by *prudence* and *philanthrophy*, before we adopt any more new systems of medicine. For my own part, I have no doubt that the red corpuscles of the blood undergo actions of repulsion and attraction, referable only to the *vital principle*, proving the narrowness of those views which have limited vitality to the more solid parts of the body, and the imperfection of every system by which the operations of life are attempted to be explained, without paying due regard to the BLOOD.

This lecture also exemplifies what too frequently happens—an individual, from his researches and discoveries entitled to the highest consideration, and suffering comparative oblivion. Such has been the reward of our talented countryman, William Hewson. The opportunity of contributing my humble mite to do him justice has afforded me great gratification.

COURSE OF LECTURES
ON THE
DISEASES OF THE EYE,
Delivered in 1839-40,
AT THE
ROYAL SCHOOL OF ANATOMY AND MEDICINE,
MANCHESTER,
By JOHN WALKER, Esq., Surgeon.

(*Delivered November* 21, 1839.)

LECTURE II.

Chronic Ophthalmia.

IN many instances conjunctival inflammation comes on insidiously, is very slow in its progress, and never attains the severity of the acute form of the disease described in the preceding lecture. In others, it may be very active for a short period at first, and then gradually assume a chronic character; and this more particularly if it be not, in the beginning, efficiently treated. Such are instances of chronic ophthalmia, in which the conjunctival inflammation may be protracted through several weeks, or even months. Of this modification of the disease I will now speak.

In chronic ophthalmia the conjunctival vessels appear to be distended and relaxed, and not to be possessed of their natural amount of tonic power. There is usually less irritability about the eye than in the acute variety, although it is often very far from being absent. The eye is watery on exposure to light, or to the cold air; weak, as the patient expresses it. It is fortunate in those cases of chronic ophthalmia which are consequent on the acute form of the disease, if the conjunctiva of the cornea have escaped, for it is very common to find that more or less opacity of this texture has been produced; and, should the opacity be seated near the centre of the cornea, there must almost of necessity be some interference with vision.

It is a remarkable fact that the conjunctiva of the lower lid is much more frequently the seat of chronic inflammation than that of the upper. This may probably be accounted for from its greater supply of blood-vessels, for, as before mentioned, in the healthy state, they are much more numerous in this than in any other portion of the conjunctiva. When the chronic inflammatory condition has existed for some time, this portion of the membrane assumes a different aspect. It becomes one entire mass of vessels, and, in some instances, presents a smooth, velvety, and in others an uneven and irregular appearance. Very frequently, also, the redness is peculiarly pale, more particularly in delicate persons.

The object to be kept in view in treating a case of this description, is to restore the weakened vessels from their relaxed and enlarged condition to their normal tone and calibre. How is this object best accomplished? Assuredly not by the use of leeches, blisters, and purgatives. At all events, you will but rarely succeed by the employment of these means. I have met with numerous tedious and protracted cases in which cupping, leeching, scarifying, blistering, mercurialising, and purging have been fruitlessly had recourse to throughout many weeks and months. Most of these cases have soon got well under what I conceive to be a much better mode of treatment.

In the slighter cases of chronic ophthalmia, I have often known the employment of the sulphate of zinc collyrium, in the proportion of three or four grains of the sulphate to an ounce of water, afford a sufficient stimulus to the relaxed conjunctival vessels. In the more severe and protracted cases, a more effectual treatment is to apply either the sulphate of copper or nitrate of silver in substance, to the conjunctival surface of the lower lid. In addition to this application,

the patient may be directed to use, at intervals, a collyrium of some stimulating kind, such as that previously mentioned, or a solution of the sulphate of copper, in the proportion of two or three grains of the sulphate to the ounce of water. The zinc ointment in milder cases, and the red precipitate in those which are more severe, should also be recommended to be applied in the evening, more particularly if the tarsal margins are apt to become agglutinated after sleep, as they sometimes are when the glandular secretion is depraved.

The application of the nitrate of silver in substance is easily made, and is by far the most efficacious remedy I am acquainted with for chronic ophthalmia. Expose the conjunctival surface of the inferior eyelid, by manipulating, as already directed, and then draw the nitrate of silver, pointed like a pencil, *lightly* across it. The portion of conjunctiva touched immediately becomes white, from the tears acting upon the nitrate of silver and producing, it is said, a muriate of silver. The application is always productive of a great increase in the lacrymal discharge, and is very generally followed by a severe smarting or burning sensation, which usually continues from half an hour to three or four hours. At the expiration of that period, the uneasiness subsides, and a decided improvement is soon perceptible in the condition of the eye.

The application of the sulphate of copper in substance, is also frequently productive of beneficial results; and, although much milder in its action than nitrate of silver, this remedy will generally be sufficiently powerful in the slighter cases of chronic conjunctivitis. It is to be applied in the same manner as the nitrate of silver, with this difference, that it should be kept in contact with the conjunctival membrane *for a few seconds*, which the patient will usually bear without much complaining. A small portion of the sulphate appears to be dissolved by the lacrymal fluid, as this fluid is generally perceived to be tinged of a blue colour, after the use of this substance.

It is rarely necessary to apply stimulants to the conjunctiva of the superior eyelid, because, in simple conjunctival inflammation, we seldom find that it participates to any considerable extent in the general inflammatory condition of the membrane; and it is the less necessary, as the effect produced by their application to the lower one becomes diffused over the whole conjunctival surface by the winking motions. Indeed, the conjunctiva of the lower lid ought to be the recipient of all the local stimulants employed in chronic ophthalmia. If we prescribe a stimulating lotion or ointment, but little good can be expected to result from its use if this be not brought into actual contact with it; and, as we know how seldom applications of this kind are properly used by patients, there is the greater necessity for the surgeon himself frequently to apply something on which he can depend for producing the proper impression. If the application of stimulant fluids be entrusted to patients or their attendants, strict injunctions should be given as to their efficient use. The lower eyelid ought to be depressed and everted, and a camel-hair pencil saturated with the fluid should then be drawn across its conjunctival surface. If an ointment be recommended, it should be first melted, and then applied in the same manner. In milder cases the fluid may be dropped upon the conjunctiva oculi, or the ointment smeared upon the tarsal margins, but neither of these is so effective a mean as the former.

Various objections have been urged against the use of stimulants of every kind, in the treatment of the affection before us; but these I consider to be untenable. By some, for example, it is thought that, where there is already inflammation, such applications must necessarily add to the mischief. It is a well-known fact, however, that substances which, when applied to the healthy structures, cause inflammation will, when applied to the same structures in a state of inflammation, often remove the inflammatory state. I need but allude to the employment of nitrate of silver in the treatment of erysipelas, of turpentine in that of burns, and the like.

I may mention also, that many writers of established reputation contend that general treatment will effect every thing that is requisite in ophthalmic practice; that we have nothing to do but to bleed, and purge, and mercurialise our patients, and that thus we shall never fail to remedy all the inflammatory conditions observed in the organ of vision. If such a representation were correct, which it is very far from being, still, who would not prefer the more rapid, more efficacious treatment by stimulants to the slow, disagreeable, and debilitating means, which are comprised in the term "antiphlogistic treatment?" What practitioner can be justified in recommending a patient to be bled, leeched, nauseated, and mercurialised, for a case of simple conjunctivitis, when it is certain that a few applications of nitrate of silver or sulphate of copper are all that is required to remove the malady, and that both more expeditiously and more completely? And yet, strange to say, there are authors who strenuously advise the antiphlogistic mode of treatment in this form of disease. Nay, they even declaim, too, against those who recommend the use of stimulants; but they take good care to shut their eyes to the impropriety of needlessly subjecting their patients (often delicate and irritable) to all the evil consequences of pro-

fuse blood-letting, salivation, and other similar means.

I have now mentioned the principal local remedies which I consider are required for the successful treatment of chronic conjunctivitis. But if we turn over the pages of authors who have written on ophthalmic surgery, we shall find in them a great number of formulæ for the preparation of various eye-lotions, drops, and ointments. A very large proportion of these formulæ, I conceive to be perfectly useless, and some of them even ridiculous, from the substances prescribed in them being either inert or incompatible in their chemical or physiological properties, or in both. I think that all the really valuable applications are few in number, and may be divided into two kinds, viz., stimulants and sedatives. In the former class may be placed more particularly the nitrate of silver and sulphate of copper, either in substance, solution, or as ointment, alum, sulphate of zinc, and oxymuriate of mercury in solution, and the red precipitate, zinc, and citrine ointments. It would be difficult, indeed, to give any good reason why these should be preferred to many other stimulating substances that might be mentioned. All that can be said is, that these, on the whole, are as suitable as any others, and have the advantage of having been sufficiently tried and found useful, and may therefore be depended upon.

Of sedative applications, those chiefly in use are warm water, decoction of poppies, the solution of super-acetate of lead, infusions of belladonna, opium, and hyoscyamus. Sedative applications should be applied merely to the external surface of the palpebræ, whilst stimulants are useless except when brought into contact with the conjunctiva. Sometimes sedatives may be judiciously combined with stimulants, particularly in the more active forms of conjunctivitis, or where the pain or uneasiness is very considerable. Thus, after having applied the nitrate of silver in substance, I frequently recommend the use of one or other of the before-mentioned sedatives.

Having now described chronic conjunctivitis, and pointed out the means ordinarily had recourse to in treating it, and those upon which I myself more particularly depend, it may not be without its use to give the following

Illustrative Cases.

Case 1.—Mr. W., a young man, an attorney's clerk, otherwise enjoying very good health, when I first saw him had been occasionally subject to attacks of inflammation of the left eye, during four or five years, the principal part of which time he had been residing in London, and under the care of several eminent ophthalmic surgeons. The last year he had resided in Manchester, and and been treated by one or two respectable surgeons by means of issues, and the ordinary antiphlogistic remedies. Some liquid substance had been likewise repeatedly dropped upon the eye, all without benefit; the inflammation up to the time of his consulting me continued, and vision gradually failed. At that period, he could not bear to expose the eye to light, and wore a shade over it, and described it as being weak and watery, but not painful. The conjunctiva of the lower lid and of the inferior portion of the eye-ball was much injected, the vessels large, and rather numerous. The sclerotica and iris were free from disease; but the lower portion of the cornea was dotted over with opaque spots, and there was a slight general nebulous appearance. Vision was so much impaired, that he was unable to read with the diseased eye. I drew down the margin of the lower lid, and then passed the nitrate of silver pencil slightly across its conjunctival surface. This operation was repeated three or four times, at intervals of three days; and afterwards the sulphate of copper was substituted for the nitrate of silver, and applied at the same intervals. He was also recommended to use a solution of sulphate of zinc, as a collyrium, frequently during the day, and the red precipitate ointment at night; and to take a dose of calomel and colocynth in the form of pill, every second or third night. In about three weeks from the commencement of this treatment, the vascularity of the conjunctiva had disappeared, and the opacity of the cornea was nearly removed: he had also thrown away his shade, and was able to read with this eye with the greatest ease.

Case 2.—Miss O., æt. 24, of a pale complexion, and rather delicate constitution, at the time of consulting me had been frequently the subject of ophthalmia, and at that period had an issue, which for three years had been kept open with a view of relieving her eyes; and she thought, while she had had the issue, that they had not been so liable to inflammation as previously. When I first saw her, the inflammatory attack had existed three weeks, during which period she had not been able to expose her eyes to the light with any degree of freedom. She was in the habit at these times of wearing blue spectacle glasses, shaded with dark crape at the sides, which afforded much relief. The conjunctiva of both eyes was much injected, and there was a slight opacity of the cornea of the right one, the vision of which was impaired. Having everted the lower lid of each eye, the nitrate of silver pencil was carried lightly across the conjunctival surface. She was recommended to use the zinc collyrium, and the red precipitate ointment, as in the former case, and to take a dose of sulphate of magnesia every two or three days. In three days time the vascularity was very much diminished, the intolerance of light

nearly gone, and she was again able to use her eyes with comfort. As she had so much improved in this brief space, I deemed it unnecessary to repeat the application of the nitrate of silver, but desired her to continue the use of the other remedies. At her next visit, three days subsequently, she was nearly well, all signs of inflammation having disappeared. This lady expressed herself highly gratified at the rapid improvement in her case, and contrasted it, with pleasing satisfaction to herself, with the slow improvement she experienced from the opposite treatment always before adopted, viz., leeching, blistering, &c.

There is one effect which I have sometimes observed to result from the use of nitrate of silver, which it is proper to mention before dismissing the subject of the local treatment of chronic ophthalmia. I mean

Superficial Ulceration of the Conjunctiva.

In the vast majority of cases, this ulceration is followed by no disagreeable consequences,—it is a matter of no importance; indeed, in some instances, it is probable that it may be rather beneficial than the contrary. Yet it occasionally happens that slight inversion of the lid results from it.

It has fallen to my lot to witness some hundreds of cases of chronic ophthalmia, in private and hospital practice, in which the nitrate of silver in substance has been employed; and I do not remember to have seen more than two or three cases in which inversion of the lid occurred, and this in all of them was so inconsiderable as to admit of being easily remedied. This, as far as I know, is the only solid objection that can be raised against its use. I mention this fact, because I am desirous that no mistakes with respect to its real effects should be made, and to show the necessity of some caution in its use. The cases I allude to I regard merely as exceptions, and very rare ones, to the general rule, that nitrate of silver, when cautiously and properly applied, is the most valuable agent we can employ in the treatment of chronic conjunctivitis.

With respect to the cases just alluded to, I would further remark that the ulceration and consequent inversion were not results of the long continued use of the nitrate, nor were the cases themselves of a very severe character: on the contrary, the nitrate had not been used more than once or twice. Indeed, it is not improbable that in these cases there was an original tendency to inversion of the lid. The following is one of the instances to which I have referred:—

Case.—M. A. ætat 25, a delicate young woman, whose general health was somewhat impaired, applied to me on account of the following disease of the right eye, which had existed for several weeks, and had been gradually getting worse. The conjunctiva, both palpebral and ocular, was very vascular; there was also an opacity on the temporal side of the cornea, with superficial ulceration, some intolerance of light, and watery discharge from the surface of the eye; vision was somewhat obscured; there was no other morbid appearance. I drew the nitrate of silver across the conjunctiva of the inferior eyelid, in the usual manner, and directed her to use the sulphate of zinc solution as a collyrium, and to take a purgative occasionally. When I again saw her, five or six days afterwards, I found the eye looking decidedly better, and the symptoms were all alleviated; but I also found that there was slight ulceration of the conjunctival suface, and that the tarsal margin had become somewhat inverted, several of the cilia being nearly in contact with the globe of the eye. I immediately drew a pointed stick of pure potass along the outer surface, and just below the ciliary margin of the lid, from one side to the other, so as to produce a narrow lengthened eschar. The other remedies were ordered to be continued, with the exception of the nitrate of silver. At her next visit, seven days afterwards, the eschar produced by the potass had separated and the ulcer consequent thereon had healed, a slight contraction of the integument had resulted, and the inversion was completely removed. There was scarcely any mark visible where the potass had been applied. At the end of another week the eye was nearly well, with the exception of the opacity of the cornea.

I have thus far said but little on the subject of internal treatment, because in the generality of cases of chronic ophthalmia, I am satisfied that it is principally to local treatment that we are to look for the means of cure. At the same time I am very far from stating that internal treatment may be neglected; on the contrary, I am always careful to inculcate the necessity of strict attention to the state of the alimentary canal, and if disorder exist there, the immediate correction of it by such means as seem most suitable.

Moreover, there are cases of conjunctival inflammation that have their origin directly in derangement of the digestive organs. In these, the inflammation is apt to return whenever the individual is out of health, and of course can only be regarded as a sympathetic affection. In such cases, local treatment will not be so serviceable; for a cure, we must rather look to the improvement of the general health. The truth of this view is exemplified by the following

Case.—Mrs. W., æt. 45, has had an affection of her left eye ever since she was a child, which came on subsequently to an attack of measles. There is a large leucomatous opacity of the cornea at its lower and central points, and a small opaque spot on the capsule of the lens, so that vision is very imperfect. This eye has been very frequently the subject of conjunctival inflam-

mation, when it has been painful, watery, and intolerant of light; and this state has almost invariably occurred when she has been troubled with indigestion. I have always found local applications of no use: the only means of relief have been such as have tended to restore the healthy functions of the digestive organs, viz., aperients and tonics, and after this has been effected the ocular complaint has subsided.

Having now treated at some length of simple conjunctival inflammation, in both its acute and chronic forms, I proceed next to the consideration of

Conjunctivitis Mucosa, or Catarrhal Ophthalmia.

Now it is necessary to remark that some writers contend that there is but one species of conjunctivitis, viz., that which we have already described, and that the different varieties we still have to treat of are but modifications of this, and depend upon the constitutional peculiarities of individuals. Whether this be a true account of the matter or otherwise, still the varieties present characters so very different, that it is necessary to study them in detail.

Catarrhal ophthalmia in point of importance holds an intermediate position between simple conjunctivitis and purulent ophthalmia, being generally more severe than the former, but less so than the latter affection. Its symptoms are therefore of a mixed character. The vascularity is usually more intense than in simple conjunctivitis; it more frequently amounts to chemosis; the mucous follicles are enlarged and elevated, and give rise to an appearance of roughness on the conjunctival surface of the palpebræ; and there is a considerable discharge, not merely of tears, but of a thick mucus with portions of a flaky substance intermixed with it. These are the distinctive characteristics of catarrhal ophthalmia.

But, besides these, there are other symptoms, viz., pain or uneasiness, and intolerance of light, which are common to it and simple ophthalmia, though the intolerance of light is often much less than in the latter affection.

The thick mucous discharge is apt to lodge about the margins of the eyelids and amongst the cilia, and cause them to adhere to each other; and the eyelids also frequently participate in the inflammatory action, the skin being reddened and their entire substance swollen.

In some instances the catarrhal affection extends to the mucous membrane of the nostrils and air passages, and is attended with sneezing, cough, &c., and there are often head-ache and other febrile symptoms present.

This affection generally attacks both eyes, though at first it sometimes remains for a short while confined to one; whereas, in simple ophthalmia, it is often confined to one throughout.

Catarrhal ophthalmia appears to originate in some peculiar condition of the atmosphere, similar to that which produces influenza. Exposure to an easterly wind, or to the combined influence of wet and cold; sleeping in a draught of air, from a door or window being left open; and similar causes, are also supposed to originate this variety of conjunctivitis.

This disease frequently attacks large numbers of persons at once, so that it is very common to find it affecting an entire family, particularly the children. Sometimes, also, it has been known to attack whole regiments of soldiers; and, not unfrequently, it spreads through almost every family in villages and even in large towns. The first is a matter of common observation, and the latter are well authenticated historical facts. In these instances, the affection is most probably propagated chiefly by atmospheric influence; though infection, as supposed by some, may also play its part.

It is this epidemic character that is one of the chief peculiarities of catarrhal ophthalmia. Now, when we find that there is conjunctival inflammation, attended with the distinctive marks I have stated, affecting two, three, or more children in a family, or many persons in a neighbourhood, I ask if this is not to be regarded as a very different affection from simple conjunctivitis? Does the latter ever take on an epidemic character? Can M. Valpeau* (for he is one of the writers to whom I before referred), or any one who denies the existence of catarrhal ophthalmia, by inflicting an injury upon the eyes of any individual, bring on an attack of this variety of conjunctival inflammation, and thus originate an epidemic disease that shall extend itself through a whole neighbourhood or an entire city?

I am quite prepared to admit that sometimes, in conjunctivitis occurring after an injury, there will be some resemblance in the symptoms to those of mild catarrhal ophthalmia, more particularly as respects the mucous character of the discharge. But we often find one disease presenting symptoms analogous to those of another to which it is nearly allied. We may readily conceive, too, that an individual who has had the eye injured in any manner, may have the resulting inflammation so far modified by the peculiar condition of the atmosphere at the time, as to give to it much of the appearance observed in catarrhal ophthalmia.

The treatment of the catarrhal variety of ophthalmia does not materially differ from that of simple conjunctivitis. In the ordinary run of cases, the symptoms arise, pro-

* Notes of lectures on ophthalmia in recent numbers of *Medical Gazette*.

ceed, and subside with much regularity and without being productive of any serious consequence, and therefore demand but little attention on the part of the surgeon. The treatment usually recommended is, at first, the application of leeches, an evaporating lotion, a blister behind the ear, and the internal administration of purgatives. Afterwards, when the more active symptoms have subsided, then a slightly-stimulating lotion, such as a solution of sulphate of zinc, is substituted for the evaporating lotion. This is the plan commonly followed; and, in my opinion, we may just as well leave the disease to proceed in its usual course, for I do not conceive that such practice is at all likely to check its progress.

If the attack be at all severe, or have become somewhat protracted, so as to seem to call for interference, I have found that the best practice is to resort at once to the use of stimulants. Prof. Beer, Dr. Mackenzie, and others, recommend a solution of nitrate of silver, in the proportion of four grains of the nitrate to an ounce of distilled water, to be dropped upon the conjunctival surface of the eye. If this be properly applied, no doubt it will be productive of benefit. I am in the habit of prefering the application of the nitrate of silver, or of the sulphate of copper, in substance. I have often noticed that the use of a solution of nitrate of silver has either not been sufficiently powerful to produce any beneficial effect, or that it has rather increased than allayed the irritation; and that, in either case, on the application of the same remedy in substance, an immediate and decided improvement has resulted. I mention this as a general remark applicable to the use of this substance, not only in this but also in other forms of ophthalmia.

In mild cases, if called upon to interfere, a single application of the nitrate of silver will generally be sufficient, or the sulphate of copper may be substituted. In those which are more severe, the former should be preferred, and it will be necessary to repeat it at intervals of three or four days.

The patient may also be directed to use a solution of the sulphate of zinc, or of the sulphate of copper: if these be used in the manner I have before pointed out, they may be decidedly useful, otherwise they may as well be omitted. The application of the zinc or red precipitate ointment to the ciliary margins of the lids occasionally, may also be serviceable. Attention should likewise be paid to the condition of the general system.

By adopting the stimulating practice, I am satisfied that we can materially lessen the duration of the disease in question, and are certain to prevent its extension to the cornea, which is otherwise apt to become vascular, ulcerated, or opaque. Indeed, the more aggravated cases are frequently so intense as to border very closely upon the disease next to be considered, viz., purulent ophthalmia.

In illustration of what I have just said on the nature and treatment of catarrhal ophthalmia I may relate the following

Cases.—An itinerant musician and his wife, both young and healthy looking persons, were attacked nearly at the same time with all the symptoms of catarrhal ophthalmia in both eyes. In the husband, the disease was comparatively slight; there was but little external affection of the lids, but the conjunctiva was very vascular, and there was a good deal of watery and mucous discharge; he had but little intolerance of light and not much uneasiness. His wife had the disease in a more aggravated form; the eyelids were considerably swollen and very red, the margins being agglutinated with the mucous discharge. The conjunctiva was intensely vascular, and in a state of chemosis, and the portion lining the lids, particularly the lower, had a rough granular appearance. Both tears and mucus escaped in great quantity, but there was nothing of a purulent character observable. She had great intolerance of light, and complained of much uneasiness in both eyes, as well as of some pain in the orbital region. When they first presented themselves, the disease had only existed three or four days. Both were treated on the stimulant plan; the man had the sulphate of copper, the woman the nitrate of silver applied to the conjunctival surface of each inferior lid; and, in addition, they were directed to use the zinc collyrium and the red precipitate ointment, and to take a purgative occasionally; the former speedily recovered; the latter had the nitrate of silver applied every three or four days, and was quite well in about three weeks from the commencement of the attack, without the cornea having at all participated.

PATHOLOGICAL SOCIETY OF DUBLIN.

Softening of the Anterior Column of the Spinal Cord in its Cervical Portion.—Dr. Power begged to draw the attention of the Society to a well marked and recent specimen of acute softening of the anterior column of the spinal cord. The patient, a woman aged 50, was suddenly attacked with paralysis of motion in the upper and lower extremities. The bladder and rectum were unaffected; a slight power of motion remained in the limbs. There was no loss of sensation; no fever, headache, or disturbance of intellect. *Sensation in the paralysed portions was perfect.* Soon afterwards she was attacked with dyspnœa, and her *breathing became diaphragmatic*; ultimately the diaphragm became paralysed, and death took place with great dyspnœa. The cervical portion of the medulla spinalis was found softened.—*Dublin Journal.*

LECTURES

ON THE

FUNCTION AND DISEASES OF THE WOMB,

BY CHARLES WALLER, M.D.

Delivered at his Class Room,

BARTHOLOMEW-CLOSE, BARTHOLOMEW'S HOSPITAL,

In a Course of Lectures on Midwifery and the Diseases of Women and Children.

LECTURE 1. — *General observations and mode of arrangement.—Function of the unimpregnated womb.— Age at which menstruation commences, various.— Symptoms attending its appearance.— Time of duration.—Period of cessation.—Use of the flow. —Discharge peculiar to the human female. —Secreted by the Uterus.— Supposed to possess noxious qualities.—Lunar influence. —Enlargement of womb at the period of menstruation.*

HAVING, gentlemen, in the preceding lectures, directed your attention to the structure of the uterus, we shall now proceed to the consideration of its diseases.

You will recollect I stated, with respect to the anatomy of that organ, that it would be brought before you in a two-fold point of view; viz., that I should, in the first place, describe the uterus in its unimpregnated condition, and afterwards notice those remarkable changes which take place after impregnation, or, in other words, the anatomy of the gravid uterus. The same order will be followed in the consideration of uterine diseases, and I shall now, therefore, request your undivided attention to a numerous, yet, I fear, too little studied class of affections, which frequently render the life of a female very irksome, not to say very miserable; I mean those to which the unimpregnated uterus is obnoxious.

Before, however, we enter upon a description of the more serious diseases of the womb, it will be better for us to make a few observations upon the *function* and functional disorders of this organ.

Menstruation and its Disorders.

It may with truth be asserted, that of all the derangements of function to which the female system is exposed, there are none more common, or which excite more uneasiness, than the irregular performance of the uterine at its monthly periods. Nor is this without reason; for although in many instances, as we shall presently show, the disturbance of the catamenia is an effect, and not a cause, yet it is well known that the disorders producing it are generally of a very serious nature, and which, if not properly attended to, would prove highly detrimental, or even destructive to life itself. Hence I would impress upon your minds the necessity of careful investigation with regard to the nature of these affections, that you may not fall into the error of supposing the uterus to be the only part in fault. The state of the constitution *generally*, as well as that of each individual organ, must be inquired into, or we shall, in many cases, fail to effect a cure. Take, as an illustration, amenorrhœa, or defective menstruation: this is sometimes the mere result of a debilitated condition of the system at large; at other times it may be clearly referred to some particular organs, a diseased action occurring in which, derange the functions of other parts, and that of the uterus amongst the rest. Again, the opposite condition, menorrhagia or an immoderate menstrual flow, is sometimes kept up, if not altogether produced, by congestion of the hepatic system, and may be considered as an effort of the vis medicatrix naturæ for the purpose of relieving the over-distended vessels of the liver. The absurdity of attending to the condition of the uterus alone, without, at the same time, applying our remedies to the removal of the original cause of the disorder, is too obvious to require more than a passing notice. I shall consider this part of our subject under the three following divisions: —1st, we shall direct your attention to the healthy function of the unimpregnated uterus, or menstruation; 2ndly, to the disorders of that function; and, 3rdly, shall make a few observations on that important period of female existence at which the function ceases; this has popularly, though not inaptly, been designated "the turn of life."

The Function of the Unimpregnated Uterus.

The womb, in its healthy unimpregnated state, is perhaps the most inactive organ in the body, having a function assigned it the performance of which is required once only in the lunar month, and hence its name, the catamenial or menstrual discharge. It consists in the periodical flow of a dark red coloured fluid, sanguineous in appearance, and usually recurs with great regularity in females who are neither pregnant or nursing.

When this evacuation first makes its appearance, the female is said to have arrived at the age of puberty; although of this condition Dr. Denman has well observed, "it is an effect, and not a cause." At this period several important changes may be noticed in the development of the organs of generation themselves, and also of the bony case by which they are surrounded. The womb enlarges considerably, both in its length and breadth; the fissure between the lips of the os uteri becomes more distinct to the touch. The ovaria also increase in size and in vascularity. The mons veneris is much developed, and covered with hair; its precise size varies much in different indivi-

duals; in those of spare habits it is small, whilst in those of an opposite character it is often large.

The alæ of the ossa ilii expand, and, with the other parts of the pelvis, now assume that particular form which so strikingly characterises it from that of the male; prior to this period you would find it much more difficult to distinguish the sexes from a mere inspection of the bones of the pelvis. There is also considerable enlargement of the glandular structure of the breasts; instead of being, as heretofore, flaccid and flabby, they become hard and tense. Not only do we observe these *local* alterations, but others also of a more general character; the countenance becoming more animated and expressive, the conversation more intelligent and agreeable, the powers of mind more developed, and the heart agitated by passions and emotions to which it had been previously a stranger. Listen to this circle of changes as described by the celebrated Hervey:—"Hoc minus notum est," he observes, "quanta virginea alteratio contingat, increscente primo et tepefacto utero: pubescit nempe, coloratior evadit, mammæ protruberant, pulchrior vultus renidet, splendent oculi, vox canora, incessus, gestus, sermo; omnia decora fiunt.' With respect to the voice, however, it may be observed that the change is by no means so conspicuous in the female as in the male. Richerand has distinctly shown that this alteration in the voice at the time of puberty depends upon the larynx undergoing an increase in capacity. He states that, in the male, the aperture of the glottis augments in the proportion of 5 to 10, in the course of 12 months; that its extent is, in fact, doubled both in length and breadth, whereas the glottis of the female only enlarges in the proportion of 5 to 7.

The precise age at which these changes occur, differs in different individuals, being under the control of various moral and physical causes. The temperance of the individual, her habits of living, and the peculiar climate in which she resides, appear to be the principal agents in accelerating or retarding the period of puberty. We shall find, as a general rule, that females in the more southern and warmer regions, menstruate at a much earlier age than in cold and northern climes; for example, in Greece, the Morea, Java, &c., the discharge often appears in girls of 8, 9, or 10 years old. In Spain, Sicily, and the more southern part of Europe, at 12 years of age; whilst in Lapland there are no symptoms of the flow until females are about 18, 19, or 20 years old. In the more temperate climates, as in our own country, an intermediate period is, for the most part, observed, menstruation usually commencing from about the fourteenth to the sixteenth year. Numerous exceptions might be adduced to this general rule, in which no inconvenience was experienced by the female. Dr. Wall relates a case in the *Medico-Chirurgical Transactions*, of singular precocity in a female infant, where the menstrual flux appeared at the age of nine months, and I have known an instance myself in which there was no appearance of the catamenia until nearly the twentieth year. The difference in the time of life at which puberty takes place has been assigned by the historian Hume as the reason why women in hot climates are so very commonly treated as slaves, and why, on the contrary, their influence is so extensive in the colder regions; in the former it may be said that woman is in the zenith of her beauty whilst a mere child in understanding, and long before her intellect is matured she ceases to be an object of love; the fact being the very reverse as regards the latter.

The climate, manner of living, and the peculiar constitution of the female, appear also to have a manifest influence on the *quantity* of the secreted fluid, although there are in this respect also great variations in women of the same country, and even in the same individual at different times. In warm climates the quantity is usually large, in the cold regions it is small, and in our own land it observes a mean between the two, the average amount being about six ounces. If, however, the female live luxuriously, or confine herself to a warmer apartment than usual, the quantity will be greatly increased.

The menstrual discharge is generally completed in a period of time varying from three to six days, but here again we must notice great variations; some females menstruate for one day only, whilst in others ten, twelve, or even fourteen days may elapse before the flow ceases. Its periodical return is, in some, marked by great regularity, not only as regards the day, but sometimes almost the hour. In others, on the contrary, it frequently takes place a week earlier, or a week later, than its natural and proper time; and all this may happen without any bodily suffering supervening.

The final cessation of the menstrual flow is regulated by the period of life at which it commenced, as it usually continues for the space of thirty years; thus, if a female commence menstruating at the age of from fourteen to sixteen years, the flow will, in all probability, cease about the forty-fourth or forty-sixth year, and after this has taken place conception cannot occur. We see from this fact that the process of childbearing is wisely confined to the most vigorous period of female life. Arterial plethora is said to be the cause of this evacuation; it ceases when venous plethora commences. Its use appears to be that of preserving the uterus in a fit state for im-

pregnation; at any rate it is well known that the due and healthy exercise of this function indicates a capability of conception, and, as a general rule, it may be stated that females whose menstrual action is disturbed, rarely conceive. There are, however, many exceptions to this statement; two cases have come under my own observation, in which conception occurred, although the females had never menstruated at all; the age of one was between 13 and 14, that of the other about 16. Again, there are numerous instances in which females have become pregnant immediately after marriage, although the menstrual function had previously been performed with great irregularity. I repeat, however, that these are to be regarded as exceptions, or deviations from the ordinary course of nature's proceedings.

In cases of obstructed menstruation, vicarious discharges of blood occasionally take place from different parts of the body; this has been specially noticed in those who are the subject of ulcerated legs, for at the time when the menses ought naturally to appear, these parts inflame, and a little blood is seen to distil from the surface of the sore; in fact, all diseased parts seem to grow worse, their vessels becoming more turgid at that period. The nervous system is also more irritable than at other times.

Menstruation is seldom completely established without the supervention of many unpleasant symptoms: there is pretty uniformly a feeling of languor and lassitude, head-ache, dull, heavy pains in the loins, hips, and region of the uterus, these frequently extending to the upper and inner parts of the thighs; the stomach is often sympathetically affected, the appetite bad, and the bowels confined. Nervous and hysterical symptoms frequently manifest themselves. After a longer or shorter continuance of some or all the symptoms just enumerated, a pale mucous discharge exudes from the vagina; this may in some instances be slightly coloured, but seldom assumes its sanguineous appearance until after several monthly periods. When the secretion is thoroughly established, and this will be known by its coming away in proper quantities, and of a red colour, these painful affections usually vanish, although in some females they recur with great violence, and with pertinacious regularity, throughout the whole term of menstruation, and these females rarely conceive.

The *discharge* is pecular to the human female, none of the lower order of animals being subject to it; if, however, you examine their genital organs, you will find that in many there is a great determination of blood at certain periods: a well-known illustration of this fact is afforded by the common domestic rabbit.

The lining membrane of the uterus is the source whence it flows, from the vessels of which it is clearly a secretion, for, notwithstanding its bloody appearance, it possesses not the coagulating principle, and appears to have the power of resisting the putrefactive process for a lengthened period of time. In cases of imperforate hymen, where the fluid has been shut up within the cavity of the uterus for months and even for years, no clot has been detected, although some alteration in its consistence is observable; it becomes inspissated, somewhat resembling treacle. A doubt formerly existed regarding the part which furnished the secretion, whether the membrane of the womb or that of the vagina was employed in this office: this doubt has been, however, unequivocally set at rest, for in cases of recent inversio uteri it has been seen to ooze from the uterine membrane itself: the same fact has been also noticed in the dissection of females who have suddenly died whilst menstruating. Dr. Blundell had once an opportunity of seeing the discharge drop through the os uteri in a severe case of procidentia.

An opinion, altogether unfounded in fact, was entertained by many of our old medical writers, that the menstrual fluid possessed properties of a malignant nature. This notion probably owed its origin to the severe regulations enforced under the Jewish dispensation, respecting the conduct of women at this particular time. The discharge, however, seems to be as innocuous as any of the other secretions of the body, and therefore we cannot agree with the opinion of De Graaf, who, in reference to this subject, expresses himself in the following words:—"Penis cum menstruatâ concumbentis excoriatur, si novella vitis eo tangatur, in perpetuum læditur, steriles sunt tactæ fruges, moriuntur insita, exuruntur hortorum germina: si mulier pregnans alterius menstrua progrediatur, aut illis circumlinatur, abortum facit: ei autem quæ uterum non gestat concipiendi spem adimit: purgantis spiritus, et vapor ab ore, specula atque eboris nitorem obscurat: gustatus hic sanguis canes in rabiem agit, homines vero diris cruciatibus affligit, comitialem morbum, pilorum effluvium, aliaque elephanticorum vitia: idcirco a veteribus inter venena relatus: pari malignitate existimatur atque sanguinis elephantici potus."

In consequence of the monthly return of the evacuation, some physiologists have imagined that the influence of the moon was in some way or other concerned in its production. The late celebrated Dr. Mead entertained this opinion, for he states that the catamenia are equally with the tides the subject of lunar influence. This theory is too absurd to require any lengthened refutation; and I will merely observe, that an unanswerable objection is afforded by the well-known fact, that different females are menstruating every day throughout the

month, whereas, had the secretion been the consequence of lunar influence, we should naturally expect it to take place on the same day, and even at the same hour, in all. Just before and at the time of the menstruation, the womb is greatly augmented in size, and this is easily accounted for by the increased quantity of blood determined to the organ at that time. Dr. Blundell had an opportunity of noticing this in a case of procidentia, which came under his immediate observation. He says, "the increase took place regularly, and the whole womb might distinctly be felt to throb, and hence we may reasonably infer," says the doctor, "that whatever may month by month be the cause of the topical increase of the vascular action in the menstruating vessels, it is the determination of blood on the uterus, produced by this topical excitement of the vessel, that gives rise to the discharge. When women are led from disease of the pelvis to examine the uterus, they sometimes imagine it to be larger at that time, or immediately before." I may also remark in conclusion, that there is often a sympathetic affection of the breasts; there is distinct enlargement, with a greater degree of firmness, not always unattended with pain. The menses, in popular language, has received various designations, such as *the courses, the terms, the flowers, the change*, and so on. More commonly, however, females during the flow call themselves *unwell* or *out of order*, or perhaps they will tell you they have not seen *them* for a longer period than usual, or *they* have been upon them for such and such a time. You should always be aware of their meaning when your patients thus express themselves, or they will have but a poor opinion of your knowledge of female disorders. Having considered the function of the unimpregnated uterus, and having noticed the various circumstances connected with its healthy action, we shall, in the next lecture, proceed with the description of its various disordered conditions.

CONGENITAL LUXATIONS OF THE FEMUR,

A REPORT ADDRESSED TO THE ROYAL ACADEMY OF MEDICINE.

By M. GERDY.

(Concluded from p. 351.)

Symptoms.—When the hip and adjoining parts are examined, it is easy to ascertain that in the majority of subjects the hand may be sunk more freely and deeper into the fold of the groin of the diseased, than the healthy side. When the attempt is made on the latter, a degree of resistance on the part of the head of the femur and especially of its neck, is experienced, which is not encountered beside the diseased joint. Towards the external iliac fossa, outside the anterior spines of the ileum, more or less difficulty occurs in detecting the prominence, which is in some instances formed by the entire superior extremity of the femur, in others by the trochanter major and the head of the bone situated behind it. This circumstance is rather observed in the variety of the disease in which the foot is rotated inwards, than when it is directed straight forwards or rotated outwards. But in consequence of the malformation and particular deviations of the neck of the femur in respect of its body, the head of the bone may be felt behind the trochanter, whatever is the position of the foot. But it is very often impossible, when the body and limbs are in the straight position, to detect the head of the femur, on account of the thickness of the parts investing it. If the body or pelvis of the patient be supported by one or more assistants, and the inferior extremity be thus drawn in the deviation of its vertical axis, it yields to the efforts of the surgeon, and becomes elongated. Observers, struck with this fact, concluded that the head of the femur glides from above downwards towards the acetabulum, into which it ought to slip; but we can readily understand, as M. Bouvier has remarked, that the elongation of the limb may be only apparent, and depend upon an inclination downwards of the pelvis. To this point I shall presently return.

When the thigh is flexed forwards, and the hand applied behind the prominence formed by the trochanter major, the head of the femur may be felt to undergo a see-saw movement, or to describe an arc of a circle. M. Bouvier affirms that this symptom is constantly present; myself and colleagues have had an opportunity of lately ascertaining its existence in four very young children. But I cannot help observing that this species of movement cannot exist in cases where the head and neck of the femur are wanting, and must disappear in those instances in which the head of the bone ends by hollowing out a new acetabulum for itself, and by being surrounded with a prominent osseous rim, or kind of bony shell. In these cases the extent of movement of which the head of the femur is capable, must be very limited. M. Bouvier supposes that this movement depends on the fact, that "the attachment of the conical diverging fasciculi of the capsule fix the base of the neck in such manner as to make it a fixed centre of movement, round which the articulating head describes arcs of a circle." Perhaps I am in error, but I do not think that this is the true state of things, and for the following reason:—The capsule being elongated to the extent required to allow the head of the femur (which it embraces along with the neck) to ascend to a variable height above the acetabulum, is

evidently a condition which, far from rendering the former steady, must actually be the cause of the free movements it executes. If the capsules were only attached to the neck, and not to the head of the femur, M. Bouvier's explanation would be satisfactory, but, on the contrary, it embraces the head also. In my opinion, the cause of the phenomenon must be sought elsewhere; and I have been induced to think that the true reason of the fixed condition of the base of the neck is to be found in the attachment of the muscles to the trochanters. And I am the more inclined to believe this to be the case, because the femur does not revolve on a fixed centre, but on a variable one—the variation taking place while the thigh undergoes the process of flexion.

In the erect position the trunk is thrown backwards, as I have already said, in speaking of the permanent deviation of the spine, a peculiarity having for its result the preservation of the equilibrium. For the same reason, as Dupuytren has observed, the patient carries his elbows and arms backwards. In this attitude, the afflicted limb, when one only is diseased, touches the ground only with the point of the toes; and the heel is raised, because the extremity is shorter than its fellow. In other cases, on the contrary, the knee on the sound side is flexed, and the limb shortened in consequence; the entire sole of the foot on the diseased side then rests on the ground. Dupuytren states, that when the dislocation is double, the patient walks on the points of the toes; he generalises this proposition, and consequently errs, for all patients do not assume this mode of progression. He supposes that their walking in this manner depends on the hip joint, and the centre of the movement being seated further backwards than usual. Unless Dupuytren here confounds the centre of movement with the centre of gravity, his meaning is unintelligible to me.

The movements of the joint, especially that of abduction, are more or less confined; that of rotation is sometimes seriously affected, when, for example, the foot is turned greatly inwards. The extent of communicated or passive movements of rotation is subject to variety. In the case of children, if the patient be laid on his back on a horizontal plane, with the legs extended, the foot may usually, by being turned outwards or inwards, be made to touch the surface with every point of its external or internal edge. Rotation is, however, always less easily effected on one side than the other. The modification of the movements of progression is more marked than those we have so far spoken of; the patient ordinarily limps in a very distinct manner; the claudication depends on the shortness of the limb. This claudication is sometimes rendered exceedingly marked by the extent of the lateral oscillations of the trunk, which have been erroneously compared with those of the waddle of a duck. I have shown elsewhere, that every time the foot is carried forward (I mean in the healthy state), the trunk bends laterally on the same side, and also in the lumbar region; now this movement is exaggerated in cases of congenital dislocation, and is further modified, in that the inflexion appears to occur on the head of the femur at the point of union of that bone with the pelvis. Hitherto this movement has been explained by the admission of a vertical gliding motion of the os ilei, on or against the joints of the femur with which it is in contact; but, as I have said, M. Bouvier denies the existence of this movement. I cannot altogether agree with this gentleman; but, nevertheless, admit that the vertical gliding motion was exaggerated by Dupuytren. A difficulty here presents itself: when the dislocation is double, claudication still takes place. The movements in the false joints are occasionally of such a kind that the patient is obliged to bind his pelvis with an appropriate bandage. In these cases the trunk is thrown alternately to the right and left. If there be no lateral gliding in this case—which I doubt, by the way—whence comes the alternate lateral oscillation? It might be said that the pelvis must incline laterally on the femur, so as to approximate the line of gravity to that bone, in such manner that that line may fall within the space covered by the foot in advance. I cannot however be positive as to the correctness of this explanation, as I have not met with any patients in the precise condition to which I refer. Sandifort says that the lower extremities describe an arc of a circle externally; as I have not observed this, I can affirm that it is at least not a constant appearance. All these symptoms are more evident in the female than in the male, on account of her greater width of pelvis.

Dupuytren, in describing the first step taken by persons affected with this complaint, when about to walk, says that they raise themselves on the point of the feet, bend the upper part of the trunk towards the limb about to support the weight of the body, raise the opposite foot from the ground, and laboriously move that weight from one side to the other. The difficulty of which he speaks is assuredly not a constant condition; I have not observed it myself; and the phenomenon itself was imperfectly analysed by the great surgeon. In the first stage of progression, in the morbid as well as in the healthy state, the foot about to be raised from the ground always concurs in carrying the centre of gravity to the foot at rest; its action ordinarily suffices for this purpose, and no other comes into play. Now Dupuytren has not mentioned this power, which must be the chief agent in changing the position of the centre of gravity. He affirms too that

each time this change is effected, the pelvis descends: this assertion also is inaccurate. In healthy progression the pelvis never descends on both sides at once; the hip corresponding to the foot about to be motionless rises, while the other falls, because the pelvis executes a see-saw movement on an antero-posterior axis, which traverses the head of the femur on the side of the motionless foot. Now in cases of congenital luxation the movement must be of the same kind. Sometimes progression is impossible unless with the help of a crutch (*Hippocr.*) or a stick; sometimes it is utterly impossible, from the extreme shortness or atrophy of the limb (*Hippocr.*)

A very remarkable fact relating to the mode of progression of persons with this deformity is, that in running their step is less tottering and firmer than in walking (*Dupuytren.*) This may be explained in the following way:—Every time the body touches the ground, in the action of running, the foot, which is the medium of contact, pushes back the body; hence it is not necessary that the trunk should be thrown much forwards into accurate equilibrium on the foot, as this is destined to support it but for a moment, and then to impel it onwards. Dupuytren by no means explained the peculiarity in question by affirming "that the energy of muscular contraction and the rapid tranference of the weight of the body from one limb to the other, which accompany this species of progression, render the want of an acetabulum and the immobility of the heads of the femora almost imperceptible."

The *course* of the complaint has been ill studied, and is therefore ill understood. As the disease is only first suspected to exist at the period when well-formed infants begin to walk, it exists for a long time without being perceived. It is said that the symptoms become more and more marked in proportion as age advances. Such is the opinion of Dupuytren; and Sandifort states that the ligaments and muscles may with progress of time become more elongated than at first, the limb consequently shortens and claudication grows more painfully evident. This may be the fact in some cases; but matters do not follow this course in subjects in whom a distinct acetabulum is developed on the ileum, either from depression of that bone or from secretion of new bony matter. In consequence of the absence of the head of the femur, or sometimes in consequence of the pressure of that part of the bone against the edge of the acetabulum, the latter diminishes in size, and undergoes more or less alteration of structure. I do not believe, as a general rule, that an articular cavity retains its natural condition when it has ceased for a length of time to be filled by the bone to which it normally gives lodgement.

The *causes* of this affection are beyond the reach of our senses; rational induction therefore is the only means by which we can hope to ascertain them. Women are more subject to the disease than men; why, I am unable to say. M. Breschet believes that the disease may originate in a suspension of development of the pelvis, and especially of the acetabulum. This may be true in cases where the brim of the acetabulum is not sufficiently prominent to lodge the head of the femur. It is evident here, that the part is not sufficiently developed, and by saying that the disease depends on a suspension of development we merely express the fact. Others have ascribed it to an aberration of the *nisus formativus*, and this is the sole legitimate explanation; but this too is only an expression of the fact, for it is evident that the joint is viciously developed. Dupuytren started the idea that the disease might depend on defective organisation of the germ, which would, according to him, clearly explain double and hereditary dislocations. He further imagined that in consequence of the state of habitual flexion of the lower extremities on the trunk in the fœtus in utero, the head of the femur must constantly press against the poctro-inferior part of the capsule; that in individuals of imperfect constitution and feebly resisting tissues, this might lead to a dislocation in the direction stated, which displacement might subsequently be converted by muscular action into a dislocation upwards and outwards. But who has ever seen a bone at rest undergo luxation? Do not dislocations occur during movement, and even violent movement? But while the child is in the state of an embryo, he is incapable of energetic motion; when he grows larger, the space in the uterus is too limited to allow of his luxating his thigh by the violence of his movements. Besides, admitting for a moment the possibility of this dislocation, I would ask has an ischiatic luxation ever been known to be metamorphosed into an iliac one by muscular action alone, without any movement of the dislocated limb, and without the assistance of the weight of the trunk, the action of which is so well marked in the erect position and in progression. Who does not see that the lower extremities of the fœtus being constantly placed in the ovum, the fibrous capsule moulds itself on the bones, as it forms, and undergoes no notable distension? M. Sédillot considers that these deformities depend on the relaxation of the ligaments, and by no means on a suspension of development. If he mean *excessive length of the ligaments* it is evident that cases occur in which this circumstance concurs in their production; but when there is neither acetabulum, head, nor neck of the femur, excessive length on the part of the ligaments is not necessary for the production of the displacement, and we have therefore no authority for supposing it to exist. It has also been presumed that these dislocations might be produced at the moment of birth, by forcible and

awkward traction of the inferior extremities, in breech or footling cases, or by careless version. This may be the fact, but in this case either the dislocation was preceded by an anatomically defective state of the joint, or not; in the former instance the dislocation is at once congenital and traumatic; in the latter traumatic only.

According to M. Pravaz, the bend or hollow of the loins, which is generally regarded as one of the symptoms and effects of congenital dislocations, is also occasionally, nay, even very frequently, their cause. The hollow of the loins, he says, becomes unusually marked in all instances where the weight of the anterior part of the body is unduly heavy, or where the centre of gravity is carried too much forwards, as occurs in pregnant women and children threatened with tabes mesenterica or rachitis. The vertebral column flexes itself backwards in these cases more than is natural, so as to carry a part of the weight behind its support on the head of the femora, and more easily establish an equilibrium with the anterior parts. Now it results from this, according to M. Pravaz, that the axis of the pelvis undergoes a see-saw movement, which has the effect of carrying its superior extremity forwards and downwards, while the inferior inclines backwards and upwards. Hence it follows that the head of the femur no longer bears against the most elevated part of the brim of the acetabulum, but against a point of its circumference, situated further back towards the union of the ileum and the ischium; in other words it bears against a spot where, in consequence of defect of ossification in young subjects, the brim of the acetabulum is at once less solid, and notched in such manner as to allow the head of the femur to distend the capsule in this direction, and in the end determine a dislocation. But it is clear that if marked hollowing of the lumbar region can produce a congenital luxation, this will not show itself until several years after birth; now dislocations of this kind are rare. Swelling of the cellulo-synovial tissue, or dropsy of the joint might, I think, cause dislocation; but would it be correct to term this a congenital disorder or a symptomatic one? The defect of all these theories, except the two first, is that they assume the displacement not to have always existed, and to have been accomplished at a certain moment of intra-uterine life; whereas the contrary is the fact, when, for example, the acetabulum and head of the femur are wanting; secondly, they are too exclusive, except the second, because the luxation almost always depends on several vices of formation in the bones and ligaments, which themselves originate in an aberration of development.

Deductions.—I cannot, as I have said, admit with MM. Humbert and Jacquier, that an articular cavity retains its normal condition, when it has long been vacated by the bony head originally filling it; nor can I admit that any changes it may present are produced exclusively by the pressure exercised on it by the displaced bone. But inasmuch as, *first*, articular cavities after dislocation lose less in point of capacity than was till lately supposed—there being a multitude of facts to prove that in subjects dying at an advanced age with congenital dislocation, the acetabulum presents half or more of its normal dimensions, when pressure of the head of the femur has not caused a diminution thereof; and inasmuch as, *secondly*, the head of the femur is ordinarily diminished in size, so that the disproportion, which would otherwise exist, is removed completely, or almost so; and no reason exists, therefore, why the parts, if brought into contact, should not form a tolerably firm articulation; and inasmuch as, *thirdly*, the fibrous capsule is not always very much contracted between the head of the femur and the acetabulum; it follows that in a certain number of cases (how many it is impossible to determine in the present state of our knowledge), the anatomical state of congenital dislocations does not always involve the impossibility of coaptation of the separated parts; nay, more, it actually authorises the boldest hopes, and gives encouragement to even the most prudential timidity. These favourable cases do not prevent the occurrence of others, which are utterly beyond our skill: in this we must content ourselves with the accommodation of a stick or a crutch, as proposed by Hippocrates, and of a girdle round the loins and pelvis, as advised by Paletta and Dupuytren.

M. Bouvier, on the other hand, does not believe in the possibility of a cure under any circumstances, and this because the base of the neck of the femur is *invariably* made a fixed point by the attachment of the crucial diverging fasciculi of the capsule, and hence, *invincibly* opposes reduction. He also founds his opinion on the failure of his own attempt and of those of other surgeons at reduction; and on the contraction of the capsule between the acetabulum and the head of the femur. As past does not involve future failure, I shall say nothing of the second objection. In regard of the first I shall only say that there is no resistance invincible by medicines, and that the base of the neck is not an invariably fixed point. Can it not be easily understood, that by the help of progressive and regular movements, managed with prudence, and accompanied by treatment calculated to mitigate or remove pain, and prevent inflammation, we may succeed in overcoming the resistance even of a fibrous capsule, at least in some cases? As to the narrowness of the capsule, its influence is proportioned to the degree of contraction and of resistance to dilatation; both are very variable. M. Bouvier further objects that machines do not fix the pelvis steadily, and that the idea that

counter extension is exercised is illusory. But this is only a difficulty in practical mechanics, and one must really have very little imagination not to be able to devise a method of fixing the pelvis steadily with a machine.

It might also be supposed that the muscles shortened by their prolonged relaxation must resist the replacement of the femur. Beyond a doubt the muscles, shortened first by their elasticity, secondly by their slow vital contraction, and thirdly by changes in their mode of nutrition, oppose the reduction energetically; but continued extension, and the influence it has on nutrition, will restore to them in time their lost dimensions.

It is evident that in cases of long established luxation, accompanied with a hard and voluminous tumour, indicating the existence of a supplementary bony acetabulum; or in cases where neither vertical nor see-saw movement is practicable, the application of machines should not be thought of, for the disease is cured already as far as possible, and is at all events unchangeable.

Having passed in review the principal topics connected with the history of congenital dislocations of the hip joint, I proceed to examine the results obtained by M. Pravaz, in their treatment. This practitioner has recorded three cases of cure in a memoir read before the Royal Academy of Medicine, in March, 1838; in two of these cases, at least, the cure is alleged to have been solid and permanent. In the first of them the treatment was discontinued too early, and the morbid condition appears to have returned. But even were this instance admitted to have been an example of complete failure, independently of the short duration of the treatment, the fact would by no means disprove the excellence of the method of M. Pravaz generally; no one has ever asserted, or ever could assert, the possibility of curing every case of congenital luxation. In a second memoir, laid before the Academy, in January last, M. Pravaz relates another case of recovery; but the favourable result in this instance has been too recently obtained to admit of our founding an accurate judgment upon it. I shall, for the present, limit my observations to one of the cases alluded to, the subject of which was presented to, and examined by, the members of the Academy.

The patient is a boy, aged seven years; the symptoms of the affection were recognised at the age of fifteen or eighteen months. M. Richard, ex-surgeon to the Charité, of Lyons, who knew the infant from birth, persuaded the family to entrust him to the care of M. Pravaz, and the treatment was commenced in March, 1836. Moderate extension on alternate days (every second day was allowed for repose) was employed, with the view of gradually lengthening the retracted muscles. On account of the weakness of the subject, this portion of the treatment was carefully watched. This preliminary process had been carried on for about seven months, and had apparently produced such results as to admit of being soon discontinued, when, from some accident or other, the child's knee was sprained, acute inflammation followed, and an antiphlogistic system of treatment required. These symptoms were removed completely at the end of six weeks; extension was then recommended, and in a month the reduction was perfect.

After the reduction several of the pelvi-crural muscles were in a state of extreme tension; and the pressure of the head of the femur, on the part with which it had newly been brought in contact, caused rather acute pain; this was relieved by keeping up the extension. The prominence previously caused by the trochanter had now disappeared; the groin had ceased to present the characteristic depression; and where the limb was pushed upwards, the head of the femur did not slip up on the dorsum ilei, but communicated the movement given it to the trunk in the normal manner.

Although the extension had, in the mean time, been maintained, and a lateral retentive apparatus applied, the child made such violent efforts to release himself from the pain he endured, that on the day after the reduction had been effected, the dislocation reappeared. The extension was now increased in force, and in less than a quarter of an hour the limb was a second time reduced. It was necessary, for upwards of eight days, to repeat the process daily; after this period, the frequency of its repetition gradually decreased. Meanwhile, a feverish state had manifested itself, but this was removed by simply lowering the patient's diet. By degrees the lateral pressure was increased in force, and finally the head of the femur definitively retained in its new situation. It was at first impossible to flex the thigh on the pelvis; but at the end of three months, during which passive movement and embrocations had been employed to facilitate the elongation of the muscles, the child was able to sit down. M. Pravaz then commenced with the employment of the apparatus, by means of which he proposes (to use his own language) to scoop out (*tarauder*) the acetabulum. This is a sort of chair, in which the patient places himself in a semi-recumbent posture, and which he puts into movement with his feet, by alternately bending and extending the thigh, while the trochanter is steadily fixed by a belt with a concave cushion. By means of this exercise, repeated twice daily, the articulation gradually acquired suppleness and strength. Subsequently the patient began to walk with rolling crutches; and, finally, in less than seven months after the reduction, to do so without artificial support of any kind. Some engravings accompanying his essay, give an

accurate representation of the apparatuses now employed by M. Pravaz; these he had already described in part elsewhere.*

The accuracy of M. Pravaz's narration is attested by numerous testimonials. Among these is, first, a statement from M. Richard, who, as I have mentioned already, knew the child from earliest infancy, to the effect that he has ascertained, by measuring the limb from the trochanter major to the sole of the foot, that it is of the same length as its fellow; that the iliac bones present no abnormal deviation, and that the pelvis is free from deformity. This surgeon, too, had previously recognised the existence of the luxation, by such characteristic signs as the following:—Undue prominence of the trochanter major; unusual distance of the same process from the median line; absence of the head of the femur from the fold of the groin, where its movements may be ordinarily distinguished with the hand; abnormal proximity of the trochanter to the crista of the ileum, as well as the antero-superior spine of that bone, &c. Secondly, we have a certificate from M. Nichet, surgeon to the Charité, at Lyons, who observed the child both before and during the entire course of the treatment, followed attentively the whole process, examined into the position of the head of the femur at short intervals, witnessed its successive displacements after reduction, and entertains not a shadow of doubt either of the nature of the disease or the curative result obtained. Thirdly, to remove the doubts of the most incredulous, comes a report, drawn up by M. Polinière, in the name of a numerous committee of the Medical Society of Lyons, after his having observed the child carefully before, during, and after the treatment. The parallel here instituted between the symptoms of the disease, before and after the cure, attests the perfect success of the latter. For my own part, I have not the smallest doubt of the child's having been affected with true congenital dislocation; in truth, no one questions this, not even M. Bouvier, for he believes that it still exists.

Minute examination of the limb has enabled me to ascertain the following particulars:—The right extremity, the former seat of the disease, is about a line longer than the left. The trochanter major, and neck of the femur, appear thicker from before to behind than usual. I fancied I could distinguish, through the thin muscles of the part, an elevation at the circumference of the head, at its union with the neck, as though it had undergone a change of form. The distance from the pubic symphysis to the middle of the external surface of the great trochanter, in an horizontal line, is accurately the same on both sides. The space comprised between the middle of the trochanter major and the median sulcus of the nates is about a line and a half shorter on the diseased side; this is readily explained by the attenuated state of the corresponding buttock. The distance from the trochanter major to the crista of the ileum, in a vertical direction, is about two lines less on the right than on the left side. This appearance may be due to a little œdematous puffiness about the insertion of the trochanteric muscles. In the erect posture, the trochanter major, the head of the bone, and the crista of ileum, are on the same level on both sides. The arcs of circles described by the lower extremity of the femora, when alternately flexed and extended, are parallel to each other, and manifestly similar; hence their respective centres are about the same. I was not able to produce the least vertical gliding of the head of the femur, on the dorsum ilei. Besides all this, the child walks with facility, and without limping.

From this combination of physical signs, which, on account of the thinness of the subject, were easily and accurately ascertainable, it appears to me to be evident that the head of the femur is really in the acetabulum, or in the depression of variable character, which in these cases occupies nearly the same position. The trifling excess in length of the affected limb is easily explained, by the deficiency of depth in the cavity thus recently occupied. Nevertheless, M. Bouvier declares that the dislocation is not reduced; that no cure has been effected. But is it not probable that M. Bouvier has been influenced by his preconceived opinion respecting the incurability of congenital dislocations? May not his prejudices have prevented him from examining the patient with perfect fairness? It is reasonable to a certain extent to suppose this the case, on contrasting this gentleman's observations on the subject with those of all other persons who have examined the patient. He fancies he found the limb even shorter than its fellow; all the other surgeons agree with me in considering it, on the contrary, a little longer, or at least as long as the healthy limb. M. Bouvier maintains that he felt the head of the femur describe an arc of a circle, precisely as in ordinary luxations. No one else, as far as I am aware, has felt this movement in the case in question; but as M. Bouvier, availing himself of the discovery of this symptom in accidental dislocations by M. Disprets, was the first to detect it in the congenital species, he concludes that it has passed unobserved in the present instance, because no one was acquainted with it. But if we cannot prove its absence *directly*, we shall perhaps succeed in doing so in another way.

We have seen that, by flexing and extending the two thighs, the lower extremities of the femora are made to describe arcs of circles, equal to and parallel to each other, so that the centres of these must be about the same. Is it not plain, that if the head of the

* Archives Générales de Médicine, 2nd série, t. viii., p. 321.

femur on one side lay above the acetabulum, and glided backwards from that cavity with a see-saw movement during the flexion of the thigh forwards, while the head of the opposite bone revolved without displacement from the acetabulum,—is it not evident, I say, if this were the case, that there would be an absence of parallelism between the arcs of circles described by the knees? Again, it is impossible that the head of the femur could be thrown from above the acetabulum backwards by a semi-circular movement, during the flexion of the thigh, into the position in which M. Bouvier affirms he found it, without the head of the femur being actually situated above the acetabulum, and the limb being consequently shorter than its fellow. Now, we have seen that the member is, on the contrary, longer than the other; the movement referred to cannot, therefore, exist. M. Bouvier may allege, in reply, that he found the limb shorter; but the joint opinion of a number of persons, founded too on the most careful measurement, must be admitted to outweigh his.

M. Bouvier, however, having offered to show me several patients affected with acknowledged luxation, in order that I might observe the close resemblance between their condition, and that of the little patient from Lyons, putatively cured, I availed myself eagerly of his invitation. You shall hear the result of my examination of these subjects, the oldest of whom was only five and a half years of age. The diseased limb was generally thinner and more slender than its fellow, and turned inwards in some instances, outwards or forwards in others. In every case the limb was manifestly shortened, even in the supine position; the amount of shortening varied from six to eighteen lines. In the erect posture, the limbs were shorter, but both at the same time, and in the same ratio. There was a decrease in the length of space comprised between the trochanter major and the crista of the ileum, corresponding partly closely with the shortening of the limb. In every one of these subjects, I detected the existence of the movement in the form of an arc of a circle, and described by the head of the femur during the alternate flexion and extension of the limb. I also ascertained that the head of the bone could be felt, in the state of extension, distinctly separate from the prominence of the trochanter major, at least by rotating the limb. The power of spontaneous movement generally appeared more limited on the affected side. The movement of abduction was invariably less, whilst that of adduction was, on the contrary, easier than that of abduction. Rotation outwards was in some subjects more extensive than usual; in others, rotation inwards.

As respects the vertical gliding of the head of the femur on the dorsum ilei, I made my investigations with more than ordinary care, because M. Bouvier is persuaded, contrary to the general opinion, that this sign does not really exist in ordinary cases. In every instance, I drew *both* limbs downwards, even when there was only one dislocation, in order to judge of their elongation by comparison. I first endeavoured, with the surgeons who accompanied me, to fix the pelvis, by placing the thumb below the antero-superior spine of the ileum, while I pulled the corresponding limb with the other hand. Afterwards we found the pelvis could be more firmly fixed, by placing the thumb on the ischion, and the fingers of the same hand at the same time on the antero-superior spine of the ileum. This mode of fixation was only employed in the last patient we examined, and in this case the vertical gliding was the least manifest. These experiments consequently call for repetition; they require greater care and habit than might, on first consideration, appear. Nor is it astonishing consequently that M. Bouvier denies the existence of the sign in question, and affirms that Dupuytren was in error regarding it. It must be granted that the condition of the subjects examined upon this occasion militated to a certain degree in favour of his opinion. But we should, perhaps, take into consideration the extent of the displacement, the weight of the trunk, and the age of the dislocation, all of which, according to the doctrine of Dupuytren, materially affect the point in question. The degree of intelligence and docility of the patient may also modify the result; it is exceedingly difficult to get children to relax their muscles in such manner as to facilitate the necessary manœuvres. Be this as it may, however, we are justified in declaring that the gliding movement has been greatly exaggerated, from confounding with it the inclination of the pelvis, produced by the actions exercised on the limb.

In fine, the observations made on M. Bouvier's patients by no means contradicted the facts ascertained with respect to the patient of M. Pravaz, and the opinion I previously held remained unchanged. Anxious, however, to sift the truth as far as possible, I begged of my brother to examine the little patient when about to visit Lyons, in the month of May, last year. In order to prepare himself for the task, he made himself accurately acquainted with the objections of M. Bouvier. The result of his examination may be given in his own words. 1st. When the child is laid on a horizontal perfectly plain surface, and the prominent points of the pelvis placed on the same transverse level, the right or formerly dislocated limb appears, on first view, a little longer than that of the opposite side; this depends probably in part on the greater robustness of the latter. The right patella especially is less developed than the left. 2ndly. In the same position, I examined the comparative length of the limbs from the summit of the

antero-superior spine of the ileum to the summit of the external malleolus, and found that they measured as follows:—

On the right side - 22 inches, 11 lines.
On the left - - - 22 inches, 10 lines or 10½ lines.

From the trochanter major to the summit of the malleolus externus:—

On the right side - 21 inches, 3 lines.
On the left - - - 21 inches, 2 lines.

From the spine of the ileum to the point of the internal surface of the knee-joint, corresponding to the union of the internal tuberosities of the femur and tibia:—

On the right side - 13 inches, 2 lines.
On the left - - - the same.

The attenuated state of the restored limb may, in this last instance, have rendered its slight excess in length inappreciable, by allowing the measuring tape to run in a more direct line between the two points. But, on the whole, the affected extremity was, as we have seen, somewhat longer, or at least as long as the second one.

I next raised the knees, while the position of the body remained the same, in such manner that the thighs formed a right angle with the axis of the trunk, the legs being flexed at an acute angle on the thighs, and the feet resting on the same plane. I then found that the measurement of the distance from the spine of the ileum to the summit of the internal malleolus, passing over the middle of the patella, gave the same result on both sides. A rule was then placed across the knees, before the patient was moved from his position, and the distance from the rule to the plane on which he lay was found equal on both sides.

When the patient lay on his side, and both limbs were flexed simultaneously, the knees described precisely the same curve. The distance from the antro-superior spine of the ileum to the postero-superior angle of the trochanter major was—

On the right side - 3 inches, 3 lines.
On the left - - - 3 inches, 1½ line.

I examined the upper extremity of the thighs with the greatest care, when the child was standing and lying down, when the limbs were at rest, or purposely moved, without being able to detect any noteable difference between them. I could neither feel the head of the femur above the trochanter major, nor the movement of an arc of a circle, which it may be made to describe in cases where a luxation really exists. Again, on placing the thumb on the internal part of the joint, or the fold of the groin, while I embraced the external surface with the rest of my hand, I was unable to detect any difference, any empty spot or hollow near the acetabulum of the affected side; both acetabula, in truth, appeared equally well filled with the heads of the respective femora. When the child is in the erect posture, the buttock of the affected side is less prominent, less voluminous, and of smaller extent, from without to within, than that of the opposite side; there is, apparently, an atrophous condition affecting the fat and muscles in this former situation. The lowest fold of the buttock is not so deep as that of the other, but are both on the same level. In this position, as well as when the child walks, or stops short in his walk, both limbs are equally extended, and the entire surface of both soles of the feet applied to the ground. The restored limb is somewhat weaker and stiffer than its fellow.

The treatment of this case commenced on the 20th March, 1836, and was suspended during six weeks in the course of that year, for the reason already assigned: the reduction, after having been several times attempted in vain, was first effected on the 9th January, 1837. The head was felt gliding into the acetabulum at the moment of the reduction, and it became necessary to keep up the extension for some moments, on account of the pain caused at first by the pressure of the head against the surface of that cavity. It was also felt to escape when the dislocation reappeared; and the patient declared beforehand when this was about to occur, for he felt the head of the femur slipping from the articular cavity.

Such is the account given by my brother. On the 31st of last May, having occasion to visit Lyons again, he took the opportunity of ascertaining whether the cure were really solid and durable. He found the motions of the limb generally, when the infant was lying down, much freer than the previous year; and those of flexion and abduction, in particular, very nearly as perfect as on the opposite side. Such other points as were noted before, continued in quite as favourable a state as then. Time must, however, decide whether the child will be able to give up the use of mechanical contrivances for the support of the limb altogether, and if so, *when* this fortunate change will occur.

In fine, it results from the investigation into which I have entered, that congenital dislocations of the femur (whether effected previously to birth, at, or after birth, in the latter case prepared, as it were, in advance, by an original disposition or vice of organisation), not uncommonly present such a conformation of the parts entering into the composition of the joint, as will not exclude the possibility of accomplishing the reduction of the bone. This favourable condition is most common in the earliest years of life, but may endure for a very long time. It results, also, that the state of the soft parts surrounding or helping to form the articulation, though of a kind to prevent immediate reduction in the immense majority of cases, will not oppose reduction effectually, when slow and continued extension has paved the way for the process. And it is,

besides, rational to suppose that, if the head of the femur can in certain cases determine such changes in the iliac fossa, on which it rests only obliquely, as lead to the formation of a new articular cavity, this same head may, when replaced, and steadily supported in the acetabulum by fitting apparatus, excavate for itself such a cavity as will form a solid articulation.

As respects the merit of having led to these successful results, it appears that although M. Humbert has the honour of having been the first to conceive the possibility of reducing congenital dislocations, it is by no means proved that he has really been practically successful; and that, consequently, to M. Pravaz belongs the distinction of having been the first to demonstrate by authentic facts the power of art in the removal of this most serious deformity.

CONTRIBUTIONS
TO THE
PATHOLOGY OF CHILDREN.

BY P. HENNIS GREEN, M.B.

GANGRENE OF THE MOUTH FOLLOWING MEASLES.

CASE 1.—A. SODDAIN, 3 years of age, was admitted into the hospital on the 15th of June, 1836. This child is rachitic, although the parents are healthy. For two months after birth he was subject to convulsions, which then ceased; for the last six months has had irregular accesses of fever, with some vomiting and diarrhœa. On the 13th the first symptoms of measles manifested themselves in a violent manner, with great agitation at night, cough, sneezing, and watering of the eyes, but no vomiting.

17. The eruption of measles is now full on the face, but on the rest of the body it is very imperfect; the face is tumid and red; the eyes injected and watery; there is a discharge of purulent matter from the right eyelid; the lips are dry, and covered with a dark crust; on the hands, there is a number of small, red pips, like very minute flea-bites, which are beginning to coalesce into patches; pulse strong, 140; respiration hurried, nasal, 72; the eruption is very slightly marked on the abdomen, thighs, and genital organs; the child lies restlessly in bed, and has been much agitated during the night, and occasionally delirious; he has a short, dry cough; the chest sounds well, but there is an extensive sub-crepitating râle without bronchial respiration, all over the chest. He was ordered to have decoction of mallows, with the almond emulsion; frictions, with a camphorated liniment, over the abdomen, and a tepid bath.

18. The child is much agitated, and tosses about in bed, from side to side, beating the air and tossing the hands; his face is extremely red; the lips covered with a dark crust; the eruption is coming out over the body; the skin is very hot and dry; pulse small, 130; respiration deep, nasal, 50; abdomen tender, without tumefaction; a very slight dulness of sound is thought to be perceived on the right side of the chest above; cough the same; no diarrhœa; makes water in bed. Sinapisms to the legs; almond emulsion; infusion of wild poppies.

19. To-day the child is much more quiet; he does not toss the hands about; the skin is still very dry and hot; pulse hard, 140; respiration 52, regular, slightly nasal; there is a dark crust on the lips; the abdomen free from pain; no diarrhœa; thirst; the subcrepitant râle still exists, but has become more moist; the secretion from the eyelid has ceased. Continue remedies.

20. He lies quietly in bed; face full and red; lips cleaner; skin warm, but moist; pulse, 130; respiration, 50, not accompanied by any cry or moan; cough persists without expectoration; the sub-crepitant râle very distinct at both sides of the chest; there is a little dulness of sound behind the left scapula; no diarrhœa. Infusion of violets; almond emulsion.

21. The same symptoms continue. Four leeches were applied to the right side of the chest, and the child was placed on milk diet.

22. The face is not so red as it was; he passed a quiet night; no diarrhœa, but the stools are very fœtid; skin not very hot; lips covered with a dry crust; the mouth is very dirty, and the breath is extremely fœtid; pulse small, 138; respiration 72, not very deep or oppressed; no matity of the chest; sub-crepitant râle on the right side; on the left, mucous râle. On examining the mouth it was discovered that ulceration had commenced on the right side at the union between the gums and parietes of the jaw; the gums were of a deep-red colour, and the teeth covered with a dirty crust. Continue remedies.

23. The boy is sitting up in bed; there is a red, circumscribed, hardened spot on the right cheek; the skin is warm and moist; the ulceration of the cheek and gums is extending; pulse small, 136 to 140; respiration short, 82; great thirst; no diarrhœa; the same moist subcrepitating râle as before.

24. The patient now lies in a state of apparent stupor, but is easily roused; the face is still red; the spot on the right cheek is extending towards the angle of the mouth; the lips are very dirty; the teeth and mouth foul; the breath very offensive; pulse small, 132; respiration deep and oppressed, 72; same subcrepitating râle with souffle, but no matity; cough the same as before, without expectoration; the right cheek is tumid, and very warm and hard, but the child does not express much pain when it is

touched. The eruption of measles has completely disappeared; no pain in the abdomen; no diarrhœa. Continue remedies; cataplasms to the abdomen; soup.

On the 25th a strong solution of alum was injected into the mouth.

26. The boy is weak, and looks heavy; the right cheek is more tumid and solid, but not so red; the breath very fœtid; on passing the finger along the inner side of the mouth, on the right side, the bone is found to be denuded; the gums are very dirty and spongy; pulse unequal, occasionally filiform, 147; respiration, 84. Continue remedies.

27. Lies in a state of stupor; face tumid and flushed; right eye nearly concealed by the œdematous condition of the lower lid; the mouth, on both sides, is now exceedingly dirty and fœtid; skin very hot; pulse small, 154; respiration, deep and parting, 71; the child is weak, but sits up in bed easily.

28. Both sides of face excessively swollen; eyelids closed; the left cheek now presents a red, shining appearance; it is warm and solid to the feel; breath excessively fœtid; pulse, 140; respiration, blowing through the nose, 72; the boy lies on his back in a state of stupor. Infusion of violets; alum injections.

He was now removed to another ward, but did not recover from the stupor, and died on the following day.

Post mortem Appearances.—The integuments, on both sides of the face, are of a greenish-blue appearance, from the eyelids to within an inch of the lower jaw. On dividing the cheeks by crucial incisions the whole of the interior of the mouth was found in a state of gangrene; the periosteum of both superior maxillary bones was partly destroyed, and of a dark colour, as was also the mucous membrane lining the roof of the palate; the inner sides of the walls of the cheeks were reduced to a black diffluent mass, but the gangrene did not extend more than half way through their thickness; the masseter and pterygoid muscles are nearly destroyed, the latter up to their origins; the rest of the tissue of the cheeks is hypertrophied, very solid, granular, when divided gives a shining cut, and allows some yellowish serum to escape; the teeth of the upper jaw are all loose, but the lower jaw and the tongue are free from the disease. Head not examined.

Chest.—Both lungs adhere to the walls of the chest; the right one at the summit, the left one at various points; no effusion into the cavity of the pleuræ; the lobes of the left lung also adhere together by false membranes of an old formation; this lung is healthy internally, soft and crepitant; it does not contain a single tubercle; the membrane lining the bronchial tubes is slightly injected; a small portion of the right lung, above and posteriorly, is solidified; it breaks down readily under the finger, contains no air, and, when divided, has a mottled greyish appearance; the bronchial tubes near this part are injected, and contain some thick mucus; no tubercle in the lung, or in the bronchial glands.

Abdomen.—Liver healthy, of a brick-red colour, and free from tubercles; the gall-bladder contains a quantity of light green thin bile; spleen normal; kidnies somewhat injected; mucous membrane of the stomach of a good consistence, but presents several striœ of injection; no effusion in the cavity of the abdomen, or adhesion of the intestines; the small intestines are injected here and there, but the mucous membrane is no where softened; in three distinct portions there were as many masses of large lumbrici, numbering thirteen in all; the great intestines are contracted, and contain a quantity of very small, hard scybalæ; the urinary bladder is greatly distended with urine, rising more than half an inch above the brim of the pelvis; no tubercles under the peritoneum, or in the mesenteric glands.

MEASLES.—GANGRENE OF THE MOUTH.

Case 2.—Adele Devillers, 4 years of age, was admitted into hospital on the 4th of October, 1834. The parents and brothers of this child are healthy; but she was greatly neglected by her nurse, and brought home in a weakly state of health. About four months since she had an eruptive disease, which was either measles or scarlatina; for the last month has had purulent discharge from the eyes and ears. On Thursday last she was seized with fever, cough, sneezing, unaccompanied by vomiting or diarrhœa.

5. The face and chest are covered with the eruption of measles; there is none on the extremities; voice hoarse; cough frequent, without any expectoration; pulse 124; respiration 32; some dullness, with crepitating râle on the right side of the chest, where she complains of pain; the lips are red and tumid, covered with patches of false membrane; tongue red at the tip and edges; in the middle covered by a yellow crust; belly free from pain; no vomiting; breath fœtid, with a discharge of sero-sanguineous fluid from the mouth. Decoction of mallows; sinapisms to the legs.

6. Eruption confluent on the face and chest; very slight on the extremities; pulse 124; respiration 42; condition of mouth not altered; breath still fœtid with sanguineous sputa. The child appears to be strong, and sits up well in bed; no diarrhœa; cough not very violent; voice less hoarse; no tumefaction of the amygdalæ or pharynx; the difficulty of breathing still persists; crepitating râle all over the right side of the chest. Decoction of mallows; gum-draught.

7. The cough and dyspnœa persist; no expectoration; the sound is now evidently dull on the right side of the chest; the re-

spiratory *bruit* is absent, and replaced by bronchial respiration; pulse 132; inspirations 40; digestive and intellectual functions undisturbed. Continue remedies; milk; soup.

8. Has passed three liquid stools, but the abdomen is free from pain; pulse 120; cough less frequent; sputa tinged with blood which seems to come from the lips; tongue red; same state of mouth.

9. The eruption has disappeared; skin hot; pulse 124; respiration 36; coughs frequently, but does not expectorate; breathes much more freely; some diarrhœa.

10. The right cheek is now swollen, hard, and shining, and slightly red; breath fœtid; on examining the inside of the mouth a gangrenous spot was discovered on the lining membrane of the cheek, near the point of union between the upper gums and the cheek; pulse 120. The spot to be touched twice with the acid nitrate of mercury; gargles of bark, and syrup of roses.

11. The right cheek is now of a pale violet colour and shining appearance; it is greatly swollen; the breath has a strong gangrenous odour; left cheek also a little tumid and shining; the gangrene is extending, and the child is very weak; pulse small and frequent; diarrhœa. Continue remedies; decoction of Peruvian bark.

12. The child is extremely depressed, and does not answer when spoken to; right cheek greatly swollen, pale, and shining; left cheek less so; pulse very frequent, small and irregular; the diarrhœa persists.

13. Tumefaction accompanied by hardness of both cheeks, eyelids, and upper lip; breath extremely fœtid; it is impossible to examine the interior of the mouth; deglutition impeded; cough dry and weak; respiration very difficult, 72 in the minute; pulse small and rapid, scarcely to be counted; the chest now sounds well; copious diarrhœa; the child, nevertheless, is not so weak as she was; she sits up in bed and answers clearly when spoken to; nearly all the teeth of the upper jaw are ready to fall out.

14. The right cheek is now of an uniform purple colour; the child is feeble and sleepy; the diarrhœa continues. She remained in this state for 24 hours and then sunk, but even the evening before her death she was able to sit up in bed and speak to her parents.

Body examined 31 *hours after death.*

Mouth.—There is no perforation of the cavity of the mouth, but the lips and cheeks are reduced to one mass of gangrenous pulp; the superior and inferior maxillary bones are bare and black; all the teeth, except the four molars, have fallen out; the gums, also, are completely destroyed, and the amygdalæ are gangrenous; the pharynx is covered by a greyish fur; the larynx is covered with a darker fur, and the epiglottis is red and swollen.

Chest.—Old adhesions on both sides of the chest; the mucous lining of the larynx and trachea is of a red purple colour; bronchi less red, but filled with muco-purulent fluid; the right lung is crepitant throughout, with some vesicular emphysema at the upper edge; in the left lung are several nodules of lobular pneumonia.

Abdomen.—Mucous lining of the stomach injected, but firm; a portion of the small intestines near the termination, is softened; as also is the mucous membrane of the cæcum. The other abdominal organs are healthy.

As the patient preserved her intellectual faculties to the last, the head was not examined.

SCARLATINA AND MEASLES.—GANGRENE OF THE MOUTH.

Case 3.—Meny ——, 8 years of age, was admitted on the 2nd May, 1833, with psoriasis guttata, for which he took the arsenite of soda. On the 28th he was seized with general uneasiness, cough, pain in the throat, loss of appetite, and fever. On the 29th the fever was most intense; the eyes bright and injected; and he was delirious at night.

30. The face is of an uniform bright red colour; but there is no trace of eruption on the limbs; the whole of the inside of the mouth is red; the throat painful; deglutition impeded; breath fœtid; some diarrhœa; pulse 120; skin hot; respiration free.

31. Face red all over; the eruption has extended to the arms and abdomen; the tongue presents the appearance peculiar to scarlatina; pharynx and amygdalæ red and tumefied; skin hot; pulse 128; respiration 36; four stools; is much agitated; coughs, with mucous râle, on both sides of the chest. Gum draught; cataplasm to the abdomen; sinapisms to the legs.

June 1. Pulse 128; respiration 36; delirium and agitation during the night; the eruption has now extended over the body; the diarrhœa continues. Ten leeches to the abdomen; sinapisms to the legs.

2. Less depressed in appearance; less delirium at night; pulse 120.

3. The eruption on the extremities is manifestly measles; the skin of the face is, however, desquamating; no delirium at night; pulse 108; tongue still red. Decoction of mallows; milk diet.

The boy continued to do well and appeared to be convalescent on the 9th, but on the 11th febrile symptoms again manifested themselves; the right cheek appeared to be somewhat swollen, and on examining the mouth there was discovered a greyish spot on the gums, at the level of the first molar tooth; the gums around are of a purplish

colour. The spot to be touched with hydrochloric acid.

12. The grey spot has now become gangrenous, a round eschar of from 7 to 8 lines in diameter having formed; the cheek is more swollen; cough frequent; no diarrhœa. A blister to the arm.

13. Gangrene extending; cheek greatly swollen below, with a tense shining appearance; pulse 116. Chlorine injections.

15. Cheek still more tumefied; the breath insupportably fœtid; the gangrene has extended to the right amygdala; the expectorated matter is mixed with blood; abdomen is painful on pressure; pulse 120. Six leeches on the cheek; two cupping glasses on the posterior and right side of the chest.

16. The gangrene extends along the gums from the first incisor to the last molar tooth, and occupies a considerable portion of the thickness of the cheek, which is very painful to the touch.

17. Gangrene has destroyed the whole tissue of the gums on the right side; some of the teeth have fallen out. Gargle of hydrochloric acid.

18. The tumefaction of the cheek extends to the eyelid; the skin is shining and excessively tender; some more of the teeth have fallen out; breath fœtid as before; diarrhœa less; pulse small, 132; abdomen free from pain. Continue gargles; decoction of bark.

22. As in the former cases the gangrene continued to extend, and the child died in a state of stupor on the 22nd.

Body examined 23rd June.

Mouth.—The whole of the right side of the cheek is reduced to a gangrenous pulp; the inferior maxillary bone is denuded on the right side; the teeth loosened; superficial eschar in the left cheek; the whole face is enormously swollen; the cellular tissue is much infiltrated around the gangrenous parts.

Chest.—The right lung adheres extensively to the chest; some congestion of both lungs posteriorly; a good deal of serum in the pericardium; heart normal.

Abdomen.—No effusion in the cavity of the peritoneum; some injection here and there, without softening of the lower end of the ileum and commencement of the colon; liver healthy; spleen very large and firm.

Case 4.—Lardenois, a boy four years of age, was attacked by small-pox, on the 6th of April. The disease was mild, and he soon left the hospital in a state of convalescence. He was brought back again on the 26th of May. There were now several gangrenous points on the mucous lining of the left cheek, the membrane of which was very red and tumid in the intervals between the gangrenous spots; the external surface of the cheek was not red or swollen. The child was extremely weak; pulse very small and rapid. He died in the evening.

Body examined on the 27th.

Mouth.—Superficial gangrene of the whole of the inner surface of the left cheek; the tissue of the gums is destroyed; the teeth loose.

Chest.—No adherences between the lungs and chest. In the left lung there is a mass of tubercular matter, containing a small cavern in the centre; a few miliary granulations in the right lung; no traces of pneumonia in either organ; bronchial glands tuberculated; bronchi pale, but somewhat injected in the neighbourhood of the tubercular mass.

Abdomen.—The organs contained in the cavity were healthy; some patches of injection in the small intestines, but no softening; some tubercles in the mesenteric glands.

Case 5.—Auguste Tebraise, a boy three years of age, was admitted into hospital on the 4th of March. Fourteen days ago he had a mild form of measles; since the last four days the mouth has been sore and fœtid, and within the last two days he has lost five of his teeth.

March 5. The face is pale; both cheeks are swollen; the lips also swollen and red; there is a foul-looking ulceration, about one quarter of an inch in diameter, at the angle of junction between the lower lip and the gums; the mucous membrane of the mouth is red and tumid; the boy coughs a good deal, but is free from diarrhœa. For the next two days the gangrene continued to extend in spite of the local applications, and the patient sunk on the 7th of March.

Body examined on the 8th.

Mouth.—Two gangrenous communications between the integuments covering the chin and the mouth; one on the middle line, the other towards the left. The lower lip is nearly totally destroyed; the superior and inferior incisor teeth, and one canine, are lost; the other teeth are loose; tongue and roof of mouth intact. The mucous membrane lining the larynx and pharynx is much injected.

Chest.—Old adhesions between the left lung and the chest. There is a great number of small tubercular excavations in the upper lobe of this lung, most of which are empty, but two or three contain some fluid tubercular matter; the cavities communicate together, and with a large bronchial tube; the surrounding pulmonary tissue is hepatised; the lower lobe is also in a state of red hepatisation; the right lobe is merely congested posteriorly, but does not contain any tubercles; heart healthy.

Abdomen.—Liver healthy; lining membrane of stomach normal; the rest of the viscera are also healthy; not a single tubercle in the mesenteric glands.

Case 6.—Joseph Roberts, 4 years of age, was admitted on the 27th of September, 1833, labouring under pneumonia of the left side. The right cheek was swollen, and on examining the mouth a gangrenous eschar was discovered on the inner side of the cheek; the breath was fœtid; the tongue dry; pulse frequent and scarcely to be felt; abdomen free from pain.

2. But little change has taken place; passed two dark fluid stools; coughs a good deal.

3. Face pale and dejected; cough frequent; diarrhœa; the pulmonary symptoms, we were told, supervened on some dangerous disease, but the boy's friends were unable to describe it with any accuracy.

5. Prostration of the strength; delirium; thirst intense; pulse almost insensible; the gangrene extends from the angle of the mouth to the last molar teeth, and mortified fragments of membrane project between the teeth. Gargles, with the chloride of lime.

The boy sunk rapidly, and died without convulsion.

The inferior half of the right lung was hepatised; both lungs were studded with tubercles, and there were various points of lobular pneumonia in the inferior lobes.

The internal jugular, subclavian and venæ cavæ were examined, but no trace of pus found in them.

SMALL-POX.—GANGRENE OF MOUTH.

Case 7.—Lareminy ——, 5 years of age, was admitted on the 16th March, 1833.

This child had just recovered from an attack of small-pox, and merely coughed a little; on the 19th the breath was observed to be fœtid and the left cheek swollen, with a shining violet tinge of the skin; a small ulceration was discovered on the inside of the cheek.

21. Some fever; pulse 132; left side of cheek hard and of a rosy tint. Gargle of chloride of soda; touch the eschar with hydrochloric acid.

22. Pulse small, 140; left side of face shining and of a livid colour; the superior maxillary bone is denuded on the left side and the teeth are loose; no headache; some diarrhœa since the morning, occasioned by eating cakes.

23. The diarrhœa has ceased; tongue moist; face tender on the left side; the gangrene has not extended; the surrounding parts are red; eschar partially detached. Continue remedies.

24. The diarrhœa has returned; the gangrenous spot is extending.

25. The child is rapidly losing strength, and is unable to sit up in bed; pulse very feeble and quick; the alveolar edge of the upper jaw, on the left side, is nearly destroyed, as also the roof of the palate, but the gangrene has not extended on the cheek; tongue moist and smooth. Gargle of bark and chlorine.

26. Left cheek now presents a purple colour, and on the 27th a dark spot appeared in the midst; the pulse was nearly insensible and the patient sinking. He died in the afternoon.

Body examined 24 hours after death.

The left cheek is of a deep green and purple colour; the greater part of the internal wall is reduced to a green and black diffluent pulp; the superior maxillary bone is in a state of necrosis; the tissue of the cheek adjacent the gangrenous parts is infiltrated with a yellowish serum.

Chest.—The right lung is free from adhesion; there is a small cavern in the lower lobe, with several tubercles, but no points of hepatisation. There was also a superficial cavern in the left lung, with some miliary tubercles. Heart healthy.

Abdomen.—Mucous membrane of stomach is of a rosy grey colour, and a little softened; that of the colon much softened; a tubercular ulceration occupies one of the glandulæ agminatæ of the small intestines. Liver and spleen healthy.

GANGRENE OF THE MOUTH, FOLLOWING MEASLES.

Case 8.—Visil ——, three years of age, was admitted into the hospital on the 21st September, 1833. This boy enjoyed good health until three days back, when he was seized with fever, cough, and difficulty of breathing.

22. Skin warm; pulse 96; tongue moist and clean; but little thirst; does not cough much; chest sounds well; one stool.

23. Slight febrile symptoms continue; pulse 120.

24. An eruption of measles has appeared.

25. Pulse 128; harsh, hoarse cough, with mucous râle; for the last three or four days purulent discharge from the eyelids.

26. Cough abated; pulse 116. Decoct. of mallows; sinapisms to the legs.

27. The eruption still persists; pulse 118; mucous râle, without any matity on both sides of the chest.

30. Pulse 108; coughs a great deal. Almond emulsion; an opiate collyrium.

Oct. 2. He began to take the oxide of antimony, but was removed by his friends on the 3rd.

He was brought back on the 14th, with gangrene of the mouth; the persons who brought him affirmed that the disease had commenced on the 13th only.

15. The left side of the face is now considerably tumid, shining and resistant to the feel, but pale; the breath is excessively fœtid; the lips are swollen and bleeding; a quantity of sanies flows from the mouth, the whole of the upper part of which is in a state of gangrene; the child cries constantly, but is not very restless; pulse too rapid to

be counted; the sound of the chest on percussion is normal; a mucous râle is heard on both sides; has passed two liquid evacuations. Lemonade; chlorine gargles.

He died on the 16th.

Mouth.—The whole of the tissue of the gums is completely destroyed, and reduced to a black pulp; the teeth are all loosened; the internal surface of the cheeks are also gangrenous, but the lesion is superficial; there is no perforation of the tissue of the cheeks.

Chest.—No adhesions between the pleuræ; at the summit of the right lobe there is a tubercular mass, which is softened internally; the rest of the pulmonary tissue is healthy.

Abdomen.—The organs contained in this cavity are healthy; there are no tubercles in the mesenteric glands.

In another number of THE LANCET, it is my intention to make some observations on the symptoms and treatment of gangrene of the mouth in children.

INQUESTS IN MIDDLESEX.

CASE OF PHAGEDÆNA ORIS,

ON WHICH AN INQUEST WAS HELD.

To the Editor of THE LANCET.

SIR:—On Nov. 21, I was summoned, as consulting-physician to the Western Dispensary, to visit a little boy aged four years and four months, at No. 28, Charles-street, Lisson-grove. Mr. Anderson and Mr. Fagg were there at the time. On examination, I found that the poor little fellow was affected with gangrena oris. I explained the case fully to both the parents, and I was, therefore, much surprised to find that, after the death of the little boy, his father had demanded that an inquest might be held on the case, under the suspicion that the affection of the mouth and cheek was the effect of calomel prescribed for his son.

I trust that the publication of this case will have the effect of sparing the medical practitioner the annoyance of an inquest, and the unjust imputation upon his character, in such cases, in future.

The following is the brief account of the case afforded me by Mr. Fagg and other medical officers connected with the Western Dispensary:—

"CASE.—William Schofield, aged 4 years 4 months, was admitted as an out-door patient to the Western General Dispensary, Oct. 21, 1839, suffering from hooping-cough, under which he had laboured for ten days or a fortnight. Antimonial salines were prescribed; eight days after his admission he was attacked with severe symptoms of pneumonia. Three leeches were applied to the chest, and a mixture containing liq. ammon. acet. and vin. ant. tart., was given. Two days after this a blister was applied, and, the bowels being in a confined state, three grains of calomel were prescribed. This was on the 29th of October; until this time no calomel had been given. These measures afforded some relief to the patient, and were persisted in until about the 7th of November; the calomel being repeated on the 30th of October, the 2nd, 4th, and 7th of November.

"About this time a considerable swelling of the right cheek was observed, attended with difficulty in opening the mouth, and a very offensive breath. The gums and inside of that cheek appeared ulcerated. Bark, and a gargle of borax, were prescribed. The mouth continued getting worse, when about the 16th a sphacelus appeared on the right cheek, of about the size of a shilling, which rapidly extended to the size of a crown. Quinine, wine, and opiates were prescribed, and nitric acid was applied to the external surface of the gangrenous patch. The child continued getting worse, and died on the 23rd."

The post mortem examination was conducted with great care by Mr. Lomax, in the presence of the following gentlemen and myself, viz.: Dr. Green, Mr. Barker, Mr. Anderson, Mr. Ley, and Mr. Fagg, on Nov. 27.

There was no sign of disease within the cranium, excepting, perhaps, a little more serum than usual.

The lower lobe of the right lung was the seat of pneumonia. The pleura pulmonalis adhered by means of lung and firm adhesions to the pleura costalis.

The right auricle was gorged with blood.

There was no disease in the abdomen.

There was an extensive eschar in the right cheek; its size, externally, was 2½ inches in length by 1½ in breadth. It penetrated through the entire cheek, and occupied an equally extensive space on its internal surface; the contiguous gum was in a similar state of sloughing, the alveolar processes were denuded; one or two teeth had disappeared, and several adjacent ones were loose.

On the left side an incipient gangrene was observed, occupying the internal part of the cheek and the contiguous gum, the teeth being loose: there was no indication of such disease *externally*.

I now most carefully examined the condition of the other parts of the mouth, with a distinct reference to the question before the coroner. The *tongue* was perfectly free from tumefaction, ulceration, or other morbid condition; *the gums and internal parts of the cheek*, excepting those affected with gangrene, were also perfectly free from any morbid appearance; and the teeth were perfectly firm in their sockets.

The facts last mentioned are, in my opinion, definitive as to the question of this affection having arisen from calomel. Not to mention the extreme rarity of ptyalism in children, in cases in which many times more calomel have been given, it is well known to every observer that the effect of calomel, when it does take place, is *uniformly diffused* over the *gums, tongue*, and internal parts of the *cheek*.

It appears, therefore, scarcely necessary to adduce other facts. I may however, mention, that I have known an instance in which gangrena oris occurred, in which not a grain of calomel had been given; and Dr. Green, who observed his cases in Paris, where calomel is rarely prescribed, has taken the notes of nine such cases. Further, when sloughing from calomel does take place, and I have witnessed several such cases, one a fatal one, it is *diffused*, and is totally different in many respects from the *circumscribed* form of the gangrena oris.

It is now eighteen years since I published half a dozen cases of this disease, in the 15th volume of the *Edinburgh Medical and Surgical Journal*. I then compared them, as Dr. Parr and Mr. Burns had done before, to an affection of the *pudendum* occurring in female children, and of which an interesting account is published in the 7th volume of the *Medico-Chirurgical Transactions*, by Mr. Kinder Wood. In these latter cases the chief characteristic is a phagedænic ulceration (in one case there was mortification, however) in the place of gangrene.

In the last volume of the *Royal Medico-Chirurgical Transactions*, there is a case, by Mr. Solly, of gangrene of the *limbs* in a child only three years and seven months old.

MARSHALL HALL.

14, Manchester-square,
Dec. 1st, 1839.

CANCRUM ORIS NOT THE PRODUCT OF MERCURY.

To the Editor of THE LANCET.

SIR:—I observe in the *Weekly Dispatch* of yesterday, an account of an inquest held at New Brentford, on a child two years of age, who died from the supposed effects of mercury, and the verdict returned was that the deceased died from the effect of a powder of mercury having been administered to her.

I am induced, from having had two cases of cancrum oris occur in my practice, to make a few remarks on the analogy which exists between that horrible disease and salivation, in young children. The first case occurred to me about two years since. A child about three years of age was brought to me with fever; I prescribed two powders, containing calomel, jalap, &c., but not more than a grain and a half of the former in each. Three days after, the child was again brought to me, and small-pox had made its appearance, together with a swollen and inflamed state of the gums, which speedily ran into ulceration; the teeth dropped out one by one, and sloughing took place, extending over the whole of the mouth and cheek, and the little sufferer died in a most pitiable condition.

The second case occurred only a few months back. I was requested to see the child (two years and a half old) of a poor woman who had been attended by a young unlicensed practitioner. On visiting it I immediately recognised the same character of disease, and on inquiry found that two powders had been given, and that measles had just turned; that the powders were of a brown colour, and had acted well: this child also rapidly sunk.

Did the dreadful sloughing state of the mouth and cheek depend on the use of mercury in either of these cases? I reply decidedly not; the children belonging to both parents appeared exceedingly weakly, ill fed, badly clothed, and, in fact, in that wretched state which would favour a disease of this description, and it appears that it is only among the very poor that this cruel disease makes its appearance, the cause of which seems to be a concentration of the morbid poison of small-pox or measles in that particular part, and it has been known to occur without any mercury being administered. I must confess that I never saw a case of salivation in a child so young as two years old. Such is also the opinion of Professor Evanson, who states that he had never been able to produce salivation in a child under three years of age, and a similar opinion was entertained by Dr. J. Clarke. Now might not the case alluded to at Brentford, be similar to those related by me? And although a dose of calomel *alone* might materially tend to excite in a cachectic constitution this dreadful complaint, yet I should be very backward, were I one of a jury, to attribute the sole cause of mischief to its employment; and as it may fall to the lot of many able and respectable practitioners to be placed in a similar dilemma, wherein their character and reputation would be at stake, I have taken on myself to make these few observations, which I trust you will not think an intrusion in the pages of your excellent journal.—I remain, Sir, your's,

THOS. C. COWARD.

5, High-street, Stepney,
Nov. 18, 1839.

THE LANCET.

London, Saturday, December 7, 1839.

A KNOWLEDGE of the changes which the body undergoes after death is of considerable importance in Medical Jurisprudence; and the researches of ORFILA on "Juridical Disinterment" have rendered the history of disorganization interesting, although the subject is in itself repulsive, and has, as that writer justly observes, obtained less attention than have the history and laws of organisation. We shall, however, have little occasion to enter into the details of the charnel-house in discussing the effects of the products of putrefaction upon the public health; for in this question the volatile emanations, which escape alike the knife and the eye of the anatomist, play the principal part; and it is to be regretted that the nature of these emanations, like that of specific animal poisons, has hitherto escaped the observation of chemists. The phosphorus and sulphur which exist in the tissues of animals are believed to have a connection with the offensive odours of spontaneous decomposition, and, perhaps, to generate, with hydrogen and carbon the volatile graveyard poisons. But this is not proved; and less is known of the mode in which cadaveric emanations destroy life than of the *modus operandi* of the fumes of charcoal.

Gases and effluvia are always given off by the dead body; but their quantity and nature vary considerably in different circumstances. When leaden coffins are used, Mr. WALKER states that the expansive force of the gases given off causes the coffin to bulge out, and this compels the workmen to "tap" it frequently with a gimlet: a jet of gas escapes which, when ignited, will burn for ten minutes or half an hour. The men are aware that they here incur considerable risk, and are extremely careful in the execution of their task. When the coffin is not well secured the lead will burst. The daughter of a clergyman was embalmed, and then put into a shell; the shell was placed in a leaden coffin with a glass window in the top, that the parent might have the melancholy satisfaction of seeing the features of his child. The glass of the leaden coffin broke on the day after the corpse was shut up; "it was replaced by another, "which also broke; and then a thick plate-"glass was fixed in an iron frame, and sol-"dered to the lead. This lasted, and is now "in the vestry of ——— church."

It has long been well known that the emanations from the dead are dangerous, in a concentrated form. Dr. HAGUENOT, of Montpellier, was led to insist upon this, and upon the evils of interment in churches, by an accident which was very similar to the late occurrence in Aldgate churchyard. On the 17th of August, 1744, PETER BALSALGETTE, a gravedigger in the church of Notre Dame, Montpellier, descended into the grave of W. BOUDOU; he immediateiy fell down senseless; J. SARRAA offered to rescue the gravedigger, but had scarcely seized his dress when he became insensible, and was drawn up half dead; he soon recovered his senses, but had a kind of vertigo and numbness, which were followed by convulsions and syncope, in the course of a quarter of an hour; he was for a long time pale and emaciated, and in the city acquired the soubriquet of "the resuscitated." Three other persons descended in succession into the grave; two of them perished. Dr. H. examined the nature of the destructive gas, as well as the imperfect state of chemistry would permit; a fœtid odour was observed, which infected linen with a cadaverous smell; lighted paper, chips, &c., when placed at the opening of the grave, were instantly extinguished; cats and dogs thrown into it were violently convulsed, and died in two or three minutes; birds in a few seconds. Dr. MARET adduced the following facts in support of the opinion that cadaveric vapours are noxious. A mild catarrhal fever, he says, prevailed at Saulieu, in Burgundy (1773); the body of a very fat man was

buried in the parish church of St. Saturnin; twenty-three days afterwards a grave was opened by the side of the former to bury a woman there, who had died of the same disease; a very fœtid odour immediately filled the church, and affected all those who entered. In letting down the body a rope slipped, by which the coffin was shaken—a discharge of sanies followed, the odour of which greatly annoyed the assistants; of 170 persons who entered the church, from the opening of the grave until the interment, 149 were attacked with a malignant putrid fever, which somewhat resembled the reigning catarrhal fever, but the nature and intensity of the symptoms left no doubt on Dr. MARET's mind that the malignity was owing to the infection of the cathedral. This is less circumstantial than it might have been, but innumerable facts of the same nature prove that the events were not mere coincidences.

The removal of earth from burial places, or the displacement of coffins, has frequently been followed by disastrous results. At Riom, in Auvergne, an epidemic arose immediately after the removal of earth from a cemetery; the mortality was most fatal in the neighbourhood of the cemetery. A similar event had, six years before, caused an epidemic in Ambert, a small town in the same province. Children, who went to be catechised, were taken ill in the church of St. Eustache, in Paris, after certain bodies had been displaced; several adults were also affected. Dr. Ferret, Regent of the Faculty of Paris, reported that he found the respiration of the patients difficult, the action of the brain disordered, the heart beating irregularly, and, in some, convulsive movements of the arms and legs. A place, upon which a convent for the nuns of Saint Géneviève, in Paris, had been situated, was covered with shops. Those who first lived in them exhibited nearly the same symptoms, which were attributed to the exhalations from the dead bodies interred under the foundations. Haller states, that a church was infected by the effluvia of a single body, 12 years after burial; and that the same corpse occasioned a dangerous disease in a whole convent.

Hence it seems to have been well established, in the last century, that cadaveric emanations destroy life instantly, or give rise to various kinds of diseases; and that their effects depend upon the concentration of the poison, and a variety of accidental circumstances. It is to be regretted that the subject has not been latterly investigated, and that the discoveries and accurate methods of chemistry, experimental physiology, pathology, and vital statistics, have not placed in the clearest light the direct and indirect effects of the church-yard poison, in different degrees of concentration. The inquiry is too extensive for a private individual, and well deserves to be undertaken by the government. Mr. WALKER has, however, collected several illustrations of the effects of animal matter, in what Dr. MACARTNEY calls the two most dangerous stages of decomposition—that which takes place *immediately after death, and the extreme degree of putrefaction.* (*Gatherings from Grave-yards*, pp. 132-141.) The following case appears to have occurred under Mr. WALKER's own observation:—

"My pupil, Mr. J. H. Sutton, accompanied by an individual, for many years occasionally employed in the office of burying the dead, entered the vaults of St. —— church; a coffin, '*cruelly bloated*,' as one of the gravediggers expressed it, was chosen for the purpose of obtaining a portion of its gaseous contents. The body, placed upon the top of an immense number of others, had, by the date of the inscription on the plate, been buried upwards of eight years; the instant the small instrument employed had entered the coffin, a most horribly offensive gas issued forth in large quantities. Mr. S., who unfortunately respired a portion of this vapour, would have fallen but for the support afforded by a pillar in the vault; he was instantly seized with a suffocating difficulty of breathing (as though he had respired an atmosphere impregnated with sulphur); he had giddiness, extreme trembling, and prostration of strength; in attempting to leave the vault, he fell from debility; upon reaching the external air, he had nausea, subsequently vomiting, accompanied with frequent flatulent eructations, highly fœtid, and having the same character

as the gas inspired. He reached home with difficulty, and was confined to his bed during seven days. The pulse, which was scarcely to be recognised at the wrist—although the heart beat so tumultuously that its palpitations might be observed beneath the covering of the bed-clothes—ranged between one hundred and ten and one hundred and twenty-five per minute, during the first three days; for many days after this exposure his gait was very vacillating.

"The man who accompanied Mr. Sutton was affected in a precisely similar way, and was incapacitated from work for some days; his symptoms were less in degree—prostration of strength, pains in the head, giddiness, and general involuntary action of the muscles, particularly of the upper limbs, continued for several days afterwards; these symptoms had been experienced, more or less, by this person, on many previous occasions, but never to so great a degree. I have myself suffered from the same cause, and been compelled to keep my room upwards of a week."

While innumerable facts prove that cadaveric emanations are noxious, and sometimes instantly fatal, daily experience shows that graves may be opened, in a great number of cases, without any obvious or immediate injury to the health. M. Parent Du Chatelet relates the particulars of the removal of forty-three bodies—victims of the "three days"—in a state of advanced putrefaction, from the vaults of the church of St. Enstache. The forty-three bodies were removed in 2¼ hours, by 23 men and 12 carts, without any *accident*. The task was superintended by M. Labarraque; every precaution was taken; solutions of chlorine were used in considerable quantities; and the bodies had, it appears, been originally covered with quick lime. Parent Du Chatelet declared that the success of the measure did Labarraque great honour, and that it would be registered, "*dans les fastes de l'hygiène publique.*"* Orfila and Devergie agree that, by taking proper precautions, bodies may be disinterred for judical purposes without any imminent risk. Devergie, however, cites a case in which his friend M. Piédagnel, who had assisted him in a disinterment, was so seriously affected as to be obliged to keep his chamber for six weeks. He was himself also affected, notwithstanding that every precaution was taken to avoid the consequences of exposure to putrefying animal matter. The London sextons burn straw in foul graves, and have various modes of obviating their injurious effects. The young and inexperienced gravediggers suffer most, according to Mr. Walker. He adds, in a characteristic note, "The old "gravedigger, too frequently a reckless, "abandoned character, is like an old poacher, "wise in his own conceit, and not easily "taken; with him 'discretion is the better "part of valour.'" Mr. Walker's notions of your sexton are evidently anything but exalted; in another note, he calls the old "fox's" artifices of self-preservation "selfishness," and insinuates that the Aldgate gravedigger was a martyr of disinterestedness. His detestation of "grave-yards" extends to the gravediggers who have hapdened to live longer than they ought, according to the theory.

Nearly all the London churchyards and churches are filled with dead bodies; they have been travelled over repeatedly by the sexton's spade; the churchyard is generally raised considerably above the surrounding level; 1000 graves are opened every week in the metropolis; the earth is saturated with "human putrescence," and permeated by the ascending vapours; and the facts already adduced show that these vapours are mephitic, and instantaneously fatal in certain circumstances. The mortality of the metropolis is 45 per cent. higher than the mortality of the country districts, and although no death or epidemic could be directly traced to the churchyards, there can be little question that a part of the excessive mortality is due to their concentrated exhalations; but to what extent this cause operates with the effluvia from sewers, &c., it is impossible to say, without extensive statistical and experimental researches. To know that the cause exists, and that the present system of burial is a great social evil, is sufficient to make the members of the medical

* Annales d'Hygiène, 1830, tome 4, p. 63.

profession inquire anxiously how it can be amended, or how the seeds of sickness and premature death can be extirpated.

To read some persons writings, it might be supposed that "medical etiquette" was a mystery, or perhaps a science which required to be regularly learned, like chemistry or botany, before a physician or surgeon could conduct himself properly in the professional circle. Indeed, it is surprising that a *chair* of Medical Etiquette was never created at either of our Universities; or a course of lectures on it made "compulsory" at the Colleges, with an appointment for Mr. ABERNETHY, or Mr. GUTHRIE, or Sir A. CARLISLE, or Mr. CÆSAR HAWKINS, for instance, or some of the well-behaved Examiners of Apothecaries Hall. A few thousand pounds might have been made in this way by the Council of the College and the Worshipful Company; for quite certain it is, that had they chosen to ordain attendance on such a course, no students could have obtained an examination for their diploma or license without first presenting to them a certificate from the "recognised" lecturer on medical etiquette.

There is something more in this suggestion than plain people, who are governed in their professional conduct by the simple rules of honesty and common sense, may at first imagine. The same powers which could erect a set of metropolitan chairs of ETIQUETTE, have created, fostered, and still zealously preserve, a formal series of "grades" in the medical profession, extending from the class of perfect Pures, through the line of top apothecaries (who, according to *medical etiquette*, may be left to die on the way-side by PRESIDENTS of COLLEGES) down to the lowest rank of "subordinates," or counter druggists; and we find that a recent writer, acting in the full spirit of obedience to this gradation, occupies his treatise on Medical Etiquette with chapters on "*Physicians* called in at the suggestion of *General Practitioners*," "Village and Provincial Etiquette," "Keeping shops," "Connection between Practitioners and Chemists," and such like subjects. Considering the dilemma in which authors and other persons thus find themselves placed by the artificial positions of medical men, it is hardly to be wondered if equally artificial regulations seem necessary to govern our daily intercourse, and that an impression prevails that some code of etiquette exists, venerable for its antiquity, and shut out from general perusal, by which powdered physicians, and practitioners in pumps, square their own conduct, and expect ignorant inferiors respectfully to abide, influenced by that instinct of correct submissiveness which naturally belongs to the humble.

There can be no doubt that, under a new medical organisation, there will be settled some points of form, courtesy, and supralegal observance, under the name, perhaps, of MEDICAL ETIQUETTE. There will then be a *lex nonscripta*, as well as a *lex scripta*. For instance, it will not only become *malétiquette* to create a dispensary for diseases of the rectum, or a sanatorium for consumption, or to contract for twelve union parishes at sixteen pounds a-piece, but to puff in the Court Circular, or write newspaper announcements of one's own attendances in the mansions of the rich, or compile books simply to advertise the author, or give certificates to spectacle venders and clyster-pump makers. These proceedings have naught to do with medical science, whose interests are so well defined, and afford so safe a rule of conduct, that, regulated by the plain dictates of common sense and honourable feeling, there can be little trouble in arranging the code of etiquette. In the absence of either of these considerations, or by adopting some rule with which neither of them has any concern, absurd errors in professional life occur. For instance, we had last week a remonstrance from one accoucheur (Mr. *A.*) against another (Mr. *B.*), because the latter, having been sum-

moned unexpectedly to a labour, in the absence from home of the usual medical attendant, and having received a fee for his services, "has not, up to to this moment, handed over the amount" to the absent practitioner. What says the last "authority" on this point, ABRAHAM BANKS, Esq., an eccentric gentleman who has recently "compiled" an Essay on *Medical Etiquette?* He has a chapter on "One Practitioner "being accidentally sent for to the patient "of another," and a chapter on "One Prac "titioner attending a case of midwifery, or "an accident, for another." Independently of some common-place remarks about supplanting brother practitioners, the former chapter does not contain a shadow of a rule to guide Mr. *A.* in his opinion of Mr. *B.*, or the conduct of Mr. *B.* in retaining the fee. Mr. BANKS occupies the chapter with an expansion of the profound axiom that it is dishonourable to act dishonourably. But, in the last quoted chapter, we have the following disquisition :—

"WHEN ONE PRACTITIONER ATTENDS A CASE OF MIDWIFERY, OR AN ACCIDENT, FOR ANOTHER.

"There seems to be no general understanding in the profession, as to what is to be done in respect to the fee; some will take it, and keep it, and occasionally the patient also if they can; others compromise the matter, and retain a portion; whilst others, again, persist in refusing any consideration whatever. It is, perhaps, more congenial with the highest notions of honour, and more consistent with true dignity, to adopt this last practice, but many inconveniences necessarily arise from it; for instance, unless it be universally followed, it leads to a great deal of unfairness. A very sensitive practitioner may always persist in refusing any remuneration, whilst he, under similar circumstances, shall have every fee wrested from him: this is most unjust, and places an honourable man in a very disadvantageous position. To give another illustration of its injustice—there may be two men in a neighbourhood, the one having a very large, and the other a small practice; the chances in this case will be, that the man of small practice will do ten or more times as much for the other practitioner as that other does for him, so that he becomes in a measure his assistant, without the fair compensation. Again, in London, from the inconvenient practice of employing medical men at such great distances, it often happens that about the outskirts, or in the suburbs, a man may have to attend more cases for others than for himself; here also he acts the part of assistant to the more established practitioner.

"Now, to obviate these difficulties, some persons have proposed to divide the fee; and amongst many this is done by a previous understanding to that effect, and if all fees were of much the same magnitude, there could be no objection urged against this arrangement; but as some practitioners attend for almost as few shillings as others do for guineas, it seems unfair that he who may have paid two or three guineas should in his turn only receive a crown, or less, for conferring a similar kindness. The inconvenience also of having a fixed remuneration must be clear to every one, as in many cases a practitioner might have to pay more than he receives.

"To remove all these difficulties, we would therefore propose that, whenever one practitioner is accidentally called in to attend a labour for another—excepting amongst intimate friends, who of course will consult their feelings much better by allowing a larger latitude of generosity, if we may use that word—he shall receive half the fee, recognising no fee below one guinea, or above two, and that this shall in future be considered perfectly compatible with the highest notions of honour and professional etiquette, as it would appear to be consistent with equity and common sense. The same rule, with some slight modification, might apply to accidents, especially those of a serious character."

Here, however, no case *in point* is stated. Previous agreement to attend for another was not made in the case of our correspondent, and, in default of that, beyond all doubt the guinea belonged *to him who had earned it*, not to him who was earning another guinea somewhere else. The mal-etiquette would be, by offering the guinea to the absent practitioner, to suppose him *mean enough to take it*. Sir ASTLEY COOPER would stare at a guinea from Mr. LISTON, received in Burlington-street, at 11 o'clock, because Sir ASTLEY was not in Conduit-street when the patient called at 10. Why should surgeons in general practice adopt, as *their* etiquette, a rule that would be grotesque in "pure" surgery.

We break ground on this subject, first of all, because it needs discussion, and, in the next place, to caution our medical brethren against expecting to find, in the work of

Mr. Banks, either laws or opinions that can supply any deficiency in their libraries. It may afford texts for criticism, but is, with some exceptions, a childish production.

In consequence of some communications which we have lately received on the subject of *Cancrum Oris*, we are glad to have an opportunity of inserting the cases, which will be found at page 404 of this week's Lancet, and which have been observed and presented to us by Dr. P. H. Green. We have some other cases, similar to those which we now insert, to publish; and, probably, it will become an interesting subject of inquiry, whether mercury be one of the causes of this most fatal disease.

ROYAL MEDICAL AND CHIRURGICAL SOCIETY.

Tuesday, November 26, 1839.

Sir B. C. Brodie, President.

Three cases of Acute Inflammation of the Stomach; one produced by Arsenious Acid taken medicinally, two Idopathic. By John Burne, M.D., Physician to the Westminster Hospital.

In consequence of suggestions for employing the arsenious acid in substance, in the form of pill, rather than the arsenical solution, in menorrhagia and other uterine disorders, contained in a paper read in 1838, before the Medical and Chirurgical Society, Dr. Burne administered it in pills, containing each the 20th part of a grain, to a young lady labouring under menorrhagia, without the production of any unpleasant effects.

In a second case, however, a young woman who had suffered from amenorrhœa for nine months previously, took a similar and equal dose on Thursday, two on Friday, and one on Saturday. On the evening of Saturday, symptoms of inflammation in the stomach came on, and which after subsiding to some degree, recurred twice. On one occasion being attended with delirium, palsied shaking of the head, swimming of the eyes, and such debility and exhaustion, as to place life in imminent danger, "A result so disastrous and unexpected," says Dr. Burne, "that I thought the details might be useful as a caution to others who may be disposed to administer arsenious acid in substance. For myself, I shall hereafter abstain from prescribing it in this form."

The next case was one of spontaneous and idiopathic muco-gastritis, which proved fatal in fourteen days. The inflammation in this case was probably preceded by chronic disease of the muciparous glands of the stomach, of which a considerable portion exhibited them of unusual size and appearance.

The last case, also spontaneous and idiopathic, was one in which Dr. Burne considers the symptoms to have shown that the inflammation was seated in the sub-mucous, muscular, and sub-serous tissues of the stomach, and which he compares and contrasts with the symptoms of the case immediately preceeding.

Dr. Addison inquired upon what evidence Dr. Burne founded his diagnosis that the cases adduced were those of muco-gastritis, rather than of gastritis, properly speaking. There might be a difference, but he, Dr. A., could not see upon what evidence that difference had been founded.

Dr. Burne had no other evidence to offer than the pathological condition of the cases he had adduced, so far as the acute form of the disease went. But comparing these appearances with those observed in sub-acute or chronic cases of gastritis, he thought it quite made out that such differences as those he had pointed out in his paper did occur.

Dr. Addison thought that we should profit little by comparing the appearances observed in acute cases, with those signs which were present when the stomach was affected with chronic disease. Every kind of appearance might be found in the stomach after death, in cases in which there had been no peculiar symptoms to indicate disease previous to dissolution. The stomach would be found affected in various ways from a variety of diseases, of which there had been no symptom before death to account for them. Acute gastritis was a very rare disease. Dr. Burne had alluded to a case of "acute gastritis" which he, Dr. Addison, had treated some years since in Guy's Hospital. Now, he had no recollection of that case himself, and certain it was, that he had never treated a single case in the hospital in question as acute gastritis. It was true he had often been requested to see cases of "acute gastritis," but he had found the symptoms present to be dependent upon other diseases, as stone in the kidney, hydrocephalus, calculus in the gall-duct, &c.; and, in one case, the complaint turned out to be acute peritonitis. The latter case, indeed, might have passed as gastritis, had not the patient died, and the real nature of the disease been revealed. With reference to Dr. Burne's first case, he might mention that such instances were not uncommon. The inflammation referred to occurred not

only as the result of arsenic having been taken into the stomach, but also when arsenical preparations were used externally. He had seen two cases of the latter description: in one of these a woman had used the arsenical solution to some warts; in another the same application was made to the eruption of lepra. Gastritis of a severe character set in, and continued for some time. He thought the second case detailed by Dr. Burne was not, strictly speaking, one of acute gastritis, but perhaps might have been of a gouty character. Softening of the mucous membrane of the stomach, taken as evidence of the presence of inflammation, was a very doubtful appearance, as such softening might be present without any signs of stomach disease having existed before death. The same might be said with reference to the appearance of vascularity. He believed the case Dr. Burne had detailed as having been under his (Dr. Addison's) care at Guy's, was, in fact, one of acute peritonitis.

Dr. COPLAND inquired if Dr. Addison meant to assert that he had never met with a case of acute gastritis in his practice.

Dr. ADDISON never had seen such a case. The nearest approach to the disease he had ever seen was the case of a hysterical woman, in whom there was a modification of the neuralgic pain of the left side, which is observed in such cases. She vomited a frothy matter tinged with blood, and died of other diseases. The stomach, in this case, was found of a vivid red colour, and covered with mucous tinged with blood. It turned out to have been a case of chronic disease, which had been subject to temporary exacerbation.

Dr. COPLAND said that cases of slight, or sub-acute inflammation of the mucous membrane of the stomach, were of every-day occurrence. Abstinence for a day or two, in such cases, effected a cure. The genuine idiopathic form of acute gastritis, as described by Dr. Cullen, was indeed a very unfrequent disease, but he, Dr. Copland, had seen two or three cases of it. In warmer climates the disease was less uncommon; not, however, as occurring primarily, but as a sequence of liver disease, inflammation of the serous membrane of the liver spreading to the serous membrane of the stomach. He agreed with Dr. Burne, that although, as a primary disease, acute gastritis was not common, it nevertheless did occur occasionally; and, when it was secondary, it was the result of inflammation spreading from the serous coat of the liver or intestines.

Dr. BRIGHT said, that in one case detailed accurately by Dr. Burne, he had been consulted. If this case was not acute inflammation of the stomach he knew not what it was; it certainly was a puzzling case. There was extreme irritability of stomach, with tenderness and pain over that region; no other organ was affected. The appearances after death were those of acute inflammation. Idiopathic inflammation of the mucous membrane of the stomach was a very rare disease. In a case which he had attended in the Borough, the patient laboured under all the symptoms of this disease, and died; no obstruction existed, but two spots were observed in the stomach, which were quite gangrenous, and these were the only appearances present. No poison had been taken.

Dr. BURNE could not see what further evidence Dr. Addison required with reference to the real nature of the second case. There were signs of the local mischief before death, and afterwards the mucous membrane was found softened and vascular. True it was the presence of vascularity alone was not sufficient to warrant the inference that inflammation had existed, as vascularity might arise from other causes; but when softening was also present, the question was altered, and the disorganisation was the result of inflammation. The vascularity in this case was intense and capillary, not of that arborescent character which distinguished vascularity produced by other causes than inflammation.

When he was at the London Hospital, many years ago, he was in the habit of examining bodies for Dr. Yelloly, when that gentleman was making his observations on pseudo-morbid appearances. In these examinations it was not an uncommon thing to find the stomach very vascular, but then the vascularity was of an arborescent character, and unaccompanied by change of structure. Dr. Addison had observed that other diseases might be mistaken for acute gastritis, and had enumerated several which were likely to lead practitioners into this error. He (Dr. Burne) believed that in all the cases referred to, the symptoms were so well marked that the observant physician would not be liable to form a wrong diagnosis.

Observations on the Corpuscles of the Blood and Pus in Certain Animals. By GEORGE GULLIVER, F.R.S. *Communicated by* JOHN G. PERRY, Esq.

The author remarking, that at an early period of his inquiries, he entertained, in common with many other pathologists, the hypothesis of the transformation of the blood corpuscles into those of pus, relates summarily the result of many experiments which he has made on them in various animals, in which it results that the former are very variable in size, and that the latter differ in this respect so remarkably, that their magnitude in any single experiment, as compared with the size of the blood corpuscles, is of very little value, in regard to establish-

ing any relation or difference between the bodies.

The interesting observations of M. Mandl on the blood corpuscles of the dromedary, led the author to examine them in the paco (*auchenia paco*), llama (*auchenia llama*) and vicugna (*auchenia vicugna*), in all of which he has found the blood-disks to possess a very distinct elliptical figure, and having had an opportunity of examining a small quantity of pus from the latter animal, the author found its corpuscles to be clearly spherical, and possessing the character, in fact, of the pus globules obtained from many mammalia, with circular blood corpuscles. Hence, without denying the possibility of the transformation of the blood corpuscles into the globules of pus, the author remarks that such change could hardly have taken place in this instance.

On White Spots on the surface of the Heart, and on the Frequency of Pericarditis. By JAMES PAGET, Esq. *Communicated by* J. G. PERRY, Esq.

The object of this communication is to prove the inflammatory origin of the opaque white spots, so commonly seen on the surface of the heart, by the fact that they are almost always coincident with small threads or bands of organised lymph, forming adhesions between opposed surfaces of the pericardial membrane. The most common situation of these adhesions is between the great vessels where they are passing out at the lower and back part of the pericardium, whither the lymph naturally tends, by its own gravity and by the force of the currents excited by the heart's action in the fluid around it, to settle and become organised. More rarely, adhesions pass from the surface of the white spots themselves to the opposite surface of the pericardium, or the lining of the sac opposite is puckered like a superficial cicatrix; so as to render it probable, that adhesions had at some distant period existed, and been gradually removed. Regarding the white spots (with which, in all the cases but two, adhesions coincided) as indications of a former attack of pericarditis, it is shown by tables appended to the paper, that of 70 cases lately examined by the author at St. Bartholomew's, 33 had at some time suffered from that disease in a slight or more severe form. More than half of all the males examined, and nearly one third of the females, had been thus affected.

The subsequent effects of this slight form of pericarditis are not applicable, nor does it appear to be commonly connected with any other cardiac affection. The particular occasion in which it occurs are uncertain, but it seems to be not an uncommon accident in typhus fever and other acute diseases; intemperance and its consequences are amongst its most powerful excitants.

ROYAL MEDICO-BOTANICAL SOCIETY.

Wednesday, Nov. 13, 1839.

EARL STANHOPE, President.

OPIUM SMOKING.—THE MEXICAN PLANTS.

Dr. SIGMOND gave a lecture on opium eating and its effects. After enumerating the various evils, both bodily and mental, which invariably overtake the habitual opium eater, he referred to the practice of smoking opium as carried on to a fearful extent by the Chinese. The way in which they conduct the process is as follows:—Having "purified" the opium by maceration in water, and dried it, they place it in the bulb of a pipe with a long tube. They lie on their backs on a couch, with the head elevated, and take in one whiff of the opium smoke, which, after retaining for a very short time in the lungs, they expire gently, and in such a manner that it comes out of the eyes and nostrils. The effect is immediate and very great. All the intoxicating influence of opium seems augmented, and some even fall victims to its excess. The injurious influence upon the constitution of the patient is in proportion to its intoxicating power; premature old age, nervous debility, mental and bodily imbecility, are the unfailing lot of the opium smoker. So fascinating is the influence of this noxious drug, that many would prefer death to exclusion from smoking it. The inhabitants of colder regions do not seem to be influenced by smoking opium to anything like the extent that is observable in eastern countries.

Dr. Sigmond then alluded to the introduction of medicines into the system, by inhalation, and stated his determination of delivering some lectures before the Society on that subject.

Dr. FARRE made some observations on a variety of plants which had been transmitted from Mexico; the only remarkable circumstance connected with which, was the great number of compositæ found in the Mexican flora.

After a few words from the chairman the Society adjourned.

BRITISH MEDICAL ASSOCIATION.

December 3*rd*, 1839.

THE Minutes of the last Meeting having been read and confirmed,

J. BRYANT, Esq., Edgware-road, was unanimously elected a Member of the Society.

A letter from Dundee announcing the formation of the "Eastern Medical Association of Scotland," was read; after which the President stated that he had communicated with the new Association, and had

forwarded copies of the Outlines of Medical Reform, and other documents connected with this question. The Council expressed the gratification afforded them by the formation of another Association in Scotland, for the purpose of co-operating with this Association in promoting salutary reforms in the profession.

The general correspondence and business of the Association having been gone through, the question of the Sanatorium was again resumed, so far as to enable the Council to come to the following resolutions:—

The Council of the British Medical Association having taken into their *deliberate* consideration the probable effects of the proposed "Sanatorium" upon the public and the profession, and having heard the various arguments for and against it, with explanations from Dr. Southwood Smith, are of opinion—

1st. That notwithstanding the apparent plausibility of the scheme, it would not answer the philanthropic expectations of its founders, nor be beneficial to the public health or morals.

2nd. That similar institutions have been attempted in this country, even under royal patronage, viz., two in Dublin, one in 1793; the other in 1824, by Sir Arthur Clarke; and one, more recently, in London, called "The Asylum for the Recovery of Health" (founded by Dr. Richard Harrison, Fellow of the Royal College of Physicians), the late Dr. Maton and Sir Benjamin Brodie having been two of the medical officers; that all these schemes signally failed, from being uncongenial to the feelings of Englishmen, and altogether foreign to the habits of the nation.

3rd. That Sanatoria, if for a time so successful as to be multiplied in the metropolis and large towns, being in reality medical clubs or hospitals for the middle classes, (*miscalled* self-supporting, as they must be established and partially supported by the subscriptions of the rich) would strike at the honest independence of all those for whom they are intended.

4th. That they would work most injuriously to the profession, and thereby to the public, by depriving the members of their just and natural emoluments, by a system of monopoly and centralisation which, if applied to the other professions or to commerce, would destroy the bonds of society, and greatly lessen the salutary efforts of individual discovery, industry, and enterprize.

The Meeting then adjourned.

UNIVERSITY COLLEGE HOSPITAL.

(*Concluded from page 37.*)

SUBCLAVIAN ANEURYSM—LIGATURE OF THE VESSEL—FATAL HÆMORRHAGE.

Sept. 27. Since the last report, this patient has been going on quite well, and has had no unfavourable symptom. He has taken no medicine except slight purgatives of colocyth and castor oil. The wound is granulating freely; some swelling had taken place, but was reduced by the constant application of the warm-water dressing, changed every quarter of an hour. A slight thrill is perceptible to-day in the aneurismal tumour, but no pulsation is to be detected at the wrist; he has had occasional sleepless nights from the uncomfortable position in which he lies.

Oct. 12. Up to the present time no bad symptom has occurred, but to-day there has been a little sanious discharge from the wound; his bowels have been kept open by the compound rhubarb pill.

13. About half-past two P.M. an ounce of blood was lost from the wound; there is a slight pulsation in the aneurysmal tumour. Mr. Ancram, the house-surgeon, informed us that he had noticed this for the last two days; bowels not open since the 10th. 11 P.M. No more blood has been lost; the circulation is not at all disturbed; he does not appear anxious on account of the hæmorrhage.

15. There has been no bleeding since the 13th; the discharge has now lost its sanguineous hue. Mr. Liston took hold of the ligature with a pair of forceps, and pulled it slightly.

17. No bleeding occurred again until about two o'clock this afternoon, when slight hæmorrhage took place to the amount of about a drachm; the blood at each time is dark coloured; he has had no other symptom of any kind, except a slight pain under the sternum, which lasted about a quarter of an hour.

18. Mr. Ancram was called up in the night, as the patient had a violent pain in the left kidney; about six A.M. hæmorrhage again took place to the amount of about six ounces; a compress and bandage were applied; his pulse was weaker and quicker than usual; his countenance pale; he appeared somewhat alarmed about himself.

19. The compress and bandage remain undisturbed, and no further hæmorrhage has taken place; his countenance is anxious; his pulse weaker; he has passed a good night, and feels more comfortable this morning.

20. Mr. Ancram was called up twice in the night, hæmorrhage having occurred to the amount of about an ounce each time; in the middle of the day hæmorrhage to the amount of two ounces occurred.

21. Mr. Ancram was again called up in the night; hæmorrhage to the extent of about six ounces occurred, with great violence; this morning a succession of compresses were applied, the smallest being placed within the wound, and the whole well covered with an elastic bandage; he appeared very weak and faint after the last hæmorrhage; was sick for some time, and took ten minims of the tincture of opium; on removing the old compress, the ligature came away. About eight o'clock P.M. great hæmorrhage took place for a short time, and he lost about twelve ounces of blood; the whole of the compresses were removed, and dossils of lint introduced into the wound, and firmly pressed down; the whole was covered by the elastic bandage.

22. His bowels not having been opened for three days, he took an ounce of castor oil; he appears to have recovered from the effects of the loss of blood, and, though weak, his pulse is tolerably full, and about 70.

23. No hæmorrhage to-day; he has appeared slightly delirious; half a grain of morphia was given; there is a very fœtid discharge from the wound.

24. No hæmorrhage to-day; his pulse is quicker, and he appears more nervous than he was; he takes half a grain of muriate of morphia at night; a little sherry and water allowed him.

25. He dosed a good deal during the night; about one o'clock, hæmorrhage to about an ounce came on, but it was arrested by pressure; the bandages are very offensive, and chloride of soda was applied to them; he had half a grain of morphia at six P.M.; about eleven he made up his mind to die, and was most anxious to have the bandages removed, in order that he might bleed to death; the bandages were reapplied, and he had half a grain of muriate of morphia, which dose was repeated in two hours; he did not sleep until about six o'clock.

26. At eight A.M. he appeared somewhat better, but in half an hour became insensible; he bled more or less during the whole day, and the bleeding was no longer arrested by the bandage and compress; these were therefore removed, and pressure made on the wound by assistants, during several hours. Notwithstanding this, however, a great deal of oozing continued, and at seven P.M. an alarming hæmorrhage occurred, and could not be arrested by any kind of pressure; he lost about twelve ounces of blood, and in half an hour afterwards expired. Shortly after his death the house-surgeon removed the compresses, which were so firmly wedged into the wound, that they were extracted with some difficulty; they must have caused great pressure upon the trachea and œsophagus, and this would account for both the difficulty of breathing, and the pain in swallowing, which he had experienced since the 21st, when the very firm compress was introduced.

After-death Appearances.

The body was examined thirty-six hours after death.

The external wound appeared somewhat larger than it was immediately after the operation, all the granulations having been absorbed from the pressure. The whole wound, and the deeper part particularly, was covered with a dark sloughy matter, and had a very offensive smell.

On removing the integument and platysma, the sterno-mastoid was found separated from its insertion, except a small external portion of the clavicular part. The external jugular vein was very small. The sterno-hyoid and thyroid muscles had been completely cut across. Externally to the sterno-mastoid an extremely dense fascia covered the aneurysmal tumour. The omo-hyoid, in that part of its situation where it lies above the clavicle, was elevated by the aneurysm about an inch above its ordinary position. The glands, external to the large vessels of the neck, were enlarged. The sheath of the vessels was extremely dense. The two clavicles and the sternum were then removed, and the following state of parts exposed:—The veins on the left side were empty, the lower part of the right internal jugular, and that part of the subclavian which joins the jugular were much thickened, very much smaller, and appeared obliterated. Above the narrowing of the jugular and below it, in the subclavian, recent coagulum filling the vessel was found, and in the latter it extended down to the veins of the arm. The origins of the arteries, from the arch of the aorta, were normal, the innominata was somewhat shorter than it commonly is, and the subclavian came off behind the carotid and on a deeper plane. At its divided extremity, it was completely filled with coagulum, but this did not reach above two lines from its extremity; at this point a small artery came off from the subclavian, and up to that point the artery was pervious. From this extremity of the artery no hæmorrhage could have taken place. The carotid was pervious, and had a dark-coloured sloughy appearance at one point, where the compress had, probably, come in contact with it. The par vagum and inferior recurrent were untouched. The aneurysmal tumour commenced immediately outside the scalenus anticus, its coats were extremely dense. It pushed up the brachial plexus of nerves, one of which was slightly stretched over it. The sac was about the size of a pullet's egg, extending from immediately outside the scalenus, where it commenced suddenly, to the upper margin of the second rib, where it ceased suddenly. The artery was healthy below the aneurysm. On di-

viding the scalenus anticus the artery was discovered to be quite healthy, the transversus colli came off immediately before the point where the aneurysm commenced, then a space of about an inch, where no artery came off, and then, at nearly the same part of the artery, the vertebral, mammary, and thyroid axis all arose, and two lines from this point was the divided extremity of the artery, pervious, with no attempt at the formation of a clot or of any adhesive process. The extremity had a sloughy appearance, caused probably by the pressure of the compress, which must have been in this situation. All the arteries arising from the subclavian were pervious, and there can be no doubt that it was from this part of the artery that the hæmorrhage occurred.

This case, Mr. Liston observed, in some clinical remarks, was as favourable for the application of a ligature as could be well imagined. The man had strong health, and the full hope of recovery. The difficulty in securing the vessel had been increased by its position, coming off, at it did, at a plane posterior to the carotid. The patient had gone on to the 25th day after the operation without a single unfavourable symptom. From this time, however, there was more or less bleeding, until the case terminated in death. After death, it was found that the bleeding had occurred from the distal extremity of the artery. On account of the extremely favourable nature of this case, and its unhappy result, he should not again easily persuade himself to tie the subclavian artery internal to the scalenus muscle.

a. Thyroid cartilage.
b. Carotid artery.
c and *d*. Subclavian artery.
e. Internal mammary.
f. Vertebral.
g. Inferior thyroid.
h. Transversus colli.
i. Aneurysmal tumour.
k. Internal jugular vein.
l. Subclavian vein.
m. Superior cava.
n. Trachea.
o. Scalenus anticus.
p. The first rib.
q. Sterno-hyoid muscle.
r. Sterno-thyroid muscle.

FOREIGN HOSPITAL PRACTICE.

HERNIA OF THE LEFT LUNG FOLLOWING A WOUND OF THE THORAX, CURED BY PRESSURE WITH A TRUSS.

P. Valade, æt. 29, admitted into the hospital of La Charité, on the 21st July, 1839, under the care of M. Velpeau, on account of a small elastic swelling which had then existed for some time upon the front of the left breast. This patient, who has lately served in the army which occupies Algiers, stated that several months since he was wounded in a duel, the point of his antagonist's sword entering the left breast a little above and to the side of the nipple; he lost, at the time, a very large quantity of blood, and, being taken to the military hospital, remained under treatment for some weeks. The wound, which was of very small dimensions externally, soon healed, but, not long after his discharge from the hospital, having quitted the service, and resumed his former occupation as a carpenter, a swelling begun to make its appearance underneath the cicatrix, and has gradually increased in its size up to the present time. The tumour only protrudes when he coughs, or makes any violent muscular exertion, when it is immediately puffed up to the size of a large egg. There can be no doubt that the lung had become adherent to the internal surface of the cicatrix, since it is impossible to effect the total reduction of the protrusion.

July 24. The principal portion of the protruded lung has been reduced, and a truss has been applied with the intention of preventing its egress.

30. The hernia still protrudes when the truss is removed, but it does not appear to be as large as before.

Aug. 11. The employment of the truss appears to have answered the intentions with which it was had recourse to, since, when the pressure is removed, the hernia no longer protrudes.

Discharged cured.

In his clinical lecture upon this case, M. Velpeau stated that he had seen several instances of hernia of the lung occurring independently of any wound of the chest, and alluded to one, in particular, which existed in a young woman, where the protrusion had taken place in the subclavian region of the neck, and mounted up nearly as high as the border of the thyroid cartilage.

UNUSUAL DISLOCATION OF THE STERNAL EXTREMITY OF THE CLAVICLE.—DISPLACEMENT OF THE BONE BACKWARDS, UPWARDS, AND INWARDS.

Etienne Caréron, æt. 39, mason, was admitted on the 1st of September, into the surgical ward of La Charité, under the care of M. Velpeau, on account of a dislocation of the sternal extremity of the clavicle, which had been caused a short time previously by his having been violently squeezed between a wall and a cart. From the account which was given by the patient of the mode in which the accident had happened, it would seem that the violence had operated in such a manner as to thrust the left shoulder forcibly inwards, and break up the ligaments which connect the clavicle of the same side to the first bone of the sternum; in this way the sternal extremity of the left clavicle lay upon the superior edge of the sternum, behind the sternal attachment of the sterno-mastoid muscle. The articulating surface of the bone lay close to the junction of the sternum with the clavicle of the opposite side.

M. Velpeau considered that, in the first instance, the force producing the dislocation had operated so as to displace the sternal extremity of the clavicle upwards and backwards, inasmuch as the bone lay behind the sternal portion of the sterno-mastoid muscle, and that it was after this had been effected, that the displacement inwards and across the upper part of the sternum occurred. He considered that the case was the first instance of this kind of displacement of the sternal extremity of the clavicle which had been observed.

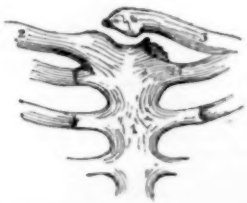
The dislocated bone was brought back into its natural situation, and retained there by the application of the apparatus of Desault, as it is employed in the treatment of fractured clavicle, the bandages having been previously moistened in the solution of dextrine.

Sept. 4. The end of the bone is not easily retained in its proper situation, it is a little displaced upwards and inwards.

6. The bandages have been removed, and the end of the bone is retained in its proper relation to the sternum.

11. Doing very well.

The accompanying sketch represents the displacement of the sternal extremity of the clavicle across the root of the neck.



1. Sternum.
2. First rib.
3. Clavicle.

ON THE LAWS WHICH REGULATE THE PRACTICE OF MEDICINE IN AUSTRIA.

By M. Berns, *Professor at the University of Vienna.*

(*Continued from page* 295.)

The direction of all affairs concerning the public health is vested in the Chancellor's Court, in the hereditary states; but in the others it is exercised by provincial committees.

The minister of war regulates quarantine. Epidemic disorders, &c., on the other hand, and their prevention, are entrusted to the charge of the provincial authorities. Each province has its chief officer of health (*Landschafts-proto-medicus*), who has the right of assisting at the provincial assemblies, and to whom are referred all matters connected with the public health of the province.

The medical director of the University of Vienna is the chief officer of health, and is in constant communication with the Chancellor's Court, relative to matters of public health; he is nominated by the Emperor, and receives a salary of £120 per annum.

Each provincial government is charged with the direction of sanatory measures within its district; it appoints parochial officers of health. The duty of the proto-medicus consists chiefly—1st, in watching over the state of public health in general; 2d, in recommending the necessary measures in cases of epidemics amongst men or cattle; 3d, in keeping an eye over the conduct of the medical men, apothecaries, and midwives of the provinces; 4th, in inspecting the hospitals, penetentiaries and prisons, &c.; 5th, in addressing reports to the government on all matters of public health. The more special objects of these reports are—the injurious effects likely to be produced by the unhealthy location of buildings, stables, &c.; marshes, stagnant water, unwholesome food offered for sale, poisons; the probable healthiness of proposed public edifices, such as theatres, prisons, churches, &c.; the site of all burying-grounds, manufactories, the establishment of shops likely to injure the workmen.

It is also the duty of the chief officer to see that the country districts are properly provided with medical men; and especially to bring to justice, or to point out to the government the existence of quacks, and all illegal practitioners: he is also to prevent the sale of medicines by any other than the apothecaries, which latter are bound, under very severe penalties, not to sell articles employed for the purpose of procuring abortion, or poisons, except under the prescription of a medical man.

Whenever any epidemic disease breaks out, it is the duty of the officer of health to address every week or fifteen days to government, reports on its progress, rate of mortality, and on the measures which have been taken to arrest its progress.

In inspecting the condition and state of pharmacy, the proto-medicus is enjoined to take with him some experienced chemist or apothecary, and to visit the different shops, assuring himself that the master has passed a regular examination, that the drugs are of good quality, &c.—*French Lancet*, No. 132, 1839.

DEATHS IN CHILD-BED, FROM INCOMPETENT TREATMENT.

To the Editor of The Lancet.

Sir:—It is with regret that I find that your laudable exertions on behalf of that much neglected portion of the creation—woman—have been treated so ill by those who are willing to do any mischief for the advancement of their party. One reason for their foolish interference in the cases of women dying in child-bed, is stated to be, that husbands do not like inquiry being made into the death of their wives. Now, I have asked the question of all husbands in the circle of my acquaintance, and I have not yet found one who has offered the least objection to your intentions. On the contrary, many trust to see your idea put into practice by every medical Coroner in England. That some few medical men should object, is not at all surprising, when we consider how little attention is paid to the diseases of women; it being a lamentable fact that, up to the present day, no examination into the qualifications of accoucheurs is held by any medical board.* It is true that certificates of attendance on lectures on midwifery, &c., are required; but these form no guarantee that the subject is understood. The Colleges of Physicians and Surgeons consider that the study of the diseases that are peculiar to women, are derogatory to surgeons and physicians! This is but a cloak for ignorance and want of humane feeling, and an evidence of unworthy pride. Would these selfish monopolists for one instant think it beneath their dignity to attend on any member of the royal family for an affection of the uterus, aye, or at her accouchement?

That your proceedings under this head, as Coroner, will be attended with the most beneficial results, I am quite persuaded; and the opposition offered to them can only proceed from those who, having neglected the subject during the period of their studies, are afraid of having their blunders exposed. I remain, Sir, your's obediently,

M. D.

London, Nov. 8, 1839.

* This is not the case in Ireland.—Ed. L.

PHYSIOLOGY OF MUSCULAR ACTION.

To the Editor of THE LANCET.

SIR:—In reply to the animadversions of your correspondent "Veritas," allow me to state that, although the cases to which he refers had been read before the Medico-Chirurgical Society, anteriorly to mine being presented to the Royal Medical Society of Edinburgh, they had *not been published* at that period, so far, at least, as I am aware. My paper was read on the 23rd of March, 1837, and if the 20th volume of the *Medico-Chirurgical Transactions* had then appeared, it could only have been within a few days. The cases furnished to Dr. Hall by Dr. Budd and Mr. Barlow were *first* published (I believe) about August, 1837, in Dr. Hall's Memoirs. The whole matter is one of so slight importance that I should not have troubled you with this correction, had I not made it a rule with myself to correct *facts* wherever I find them mis-stated, leaving *opinions* to obtain what appreciation they may deserve. Your correspondent has fallen into another error in stating that Dr. Madden's case did not bear upon the question of *sensation*. In reply, I beg to quote the following passage:—"I observed that the patient jerked his legs violently during the passage of the catheter, but upon inquiry he positively denied having experienced any sensation, being not even conscious of the presence of the instrument in the urethra."

I cannot but feel gratified with the very handsome manner in which Dr. Lynch has made the *amende honourable* in regard to the character of my Thesis. To him I have only now to say, that I shall be quite willing to reply in an amicable spirit to any criticisms he may think it worth while to publish on the soundness of the opinions I have expressed. I may mention to him that Dr. Hall's views on the distinctness of the excito-motor system of nerves have been embraced by several eminent physiologists, who have not *formally* given in their adhesion to them; so that I by no means stand alone in the position which circumstances have led me to take rather more prominently than my situation in the scientific world may seem to warrant.

Dr. Lynch has a little misunderstood the tenor of a former communication of mine, if he imagines that it was intended to establish my claims to priority, in any of the additions which have been recently made to our knowledge on this interesting subject. The attainment of truth is my leading object, and in pursuing it I care very little for what may be thought of my labours as *mine*, provided their *scientific* value be fairly estimated. It was to set Dr. L. right on the latter point that I replied to his criticisms as I did. To stigmatise an Essay as containing "nothing new," is at once to take away a great inducement to peruse it, on the part of the scientific world; and my only object was to show that this was not the case in regard to mine. I would have done as much for any one else, who might have been attacked in a similar manner. Trusting that I shall not be again called on to address you for such a purpose, I am, Sir, your obedient servant,

W. B. CARPENTER.

Bristol, Dec. 3, 1839.

CORRESPONDENTS.

T. C. may be required to fulfil the duty of giving evidence, &c., at the inquest, without remuneration; but in the case of attendance at other courts, sessions, or assizes, he is entitled to the usual payment for time.

A. B. should himself make the inquiry respecting Dr. Firth, and communicate to us the result, authenticated confidentially.

A Surgeon (Bath).—The fee was not due unless the witness was a legally qualified practitioner, and expressly summoned by the coroner to give medical evidence at the inquest. "Attendance on hospital and lectures in town" does not supply the grounds of qualification. The second question of our correspondent is at present under litigation, and from all that he has let fall in his letter (for the circumstances are not fully stated), we should doubt that to try it in a court of law in his own case would prove judicious. The decisions both of judges and juries are often more perilous than wise.

S. Taylor, M.R.C.S.—The shop and profession of druggist appear to be essentials; but the matter is at present *sub judice*. As to "legal qualification," S. T. will, under a new law, forfeit no qualification that he at present possesses.

P. V.—It is obviously impossible to point to any opinion on the subject.

This is not the place to convey the admonitions of *An Old Pupil*. Moreover, the attempt seems to have brought its own warning.

A Practising Apothecary will forfeit no existing privilege. On the contrary, without any of the sacrifices which he names, he will acquire new rights.

W. Starr.—When painful, or otherwise troublesome, seek medical advice personally.

Physic.—The fee belonged to Mr. Welsh. Medical etiquette does not demand its relinquishment always on such occasions.

The letter of *Dr. Sheriff's* reached us too late for publication this week, but his reply shall appear in the next LANCET. In the mean time, Mr. Gray has appended his name to another letter on the Dispensary for the Lungs.